A CHILTON PUBLICATION

the Iron Age

E NATIONAL METALWORKING WEEKLY

July 15, 1954

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How **THE MEDART COMPANY** uses Timken bearings to take heavy loads and insure accuracy in its No. 9 Straightener's roll yoke.

Straightens 10½" solid bars— takes the load on TIMKEN® bearings

THIS 2-roll Rotary Tube Bar Straightener was built by The Medart Company for an Ohio steel mill. Special features of this machine are a power operated pressure control and an open side to the gear box to facilitate unloading.

To take the heavy loads of straightening 10½" diameter solid bars, Timken® tapered roller bearings are used on the straightening roll yoke. Timken bearings have load carrying capacity to spare because they carry loads on the lines of contact between the rollers and races.

In the machine's gear box, Timken bearings keep shafts in rigid alignment, insure accurate gear meshing. The tapered design of Timken bearings enables them to take radial and thrust loads in any combination, eliminates the need for extra thrust devices.

All in all there are 69 Timken bearings in this Medart straightener. Like other machine builders, The Medart Company knows it gets full value in its machines by using Timken bearings. We take every precaution possible to insure the quality of our bearings. We even make our own steel. Whether you build or buy machines, specify bearings with the trade-mark "Timken". You'll get the most for your money. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER ⊂⊃ THE TIMKEN TAPERED ROLLER ⊂⊃ BEARING TAKES RADIAL AND THRUST —◐— LOADS OR ANY COMBINATION —◐—

How much heat from a "heat" of Chromel?

You've seen molten metal before . . . but chances are you've never seen a "heat" that's more closely controlled as to composition and quality than the one you see above. For this is a heat of Hoskins Chromel . . . the *original* nickel-chromium alloy that *first* made electrical heating practical. Into it go precise amounts of the purest raw materials obtainable . . . mixed, melted, and poured in exactly timed cycles.



Heating elements made of Hoskins Chromel give long life service in industrial electric furnaces, home appliances.



Spark plugs equipped with Hoskins electrode alloys give long dependable service wherever they're used.



Hoskins Chromel-Alumel thermocouple alloys accurately register exhaust temperatures of jet aircraft engines.

And from it, ultimately, will come approximately 1200 pounds of fine finished material . . . smooth, bright, durable wire or ribbon produced to a specified resistivity for long, dependable service as heating elements or cold resistors in countless different electrical devices.

Chromel, however, is only one of many specialized, quality-controlled alloys developed and produced by Hoskins. Others include: Alloy 502 . . . used throughout industry for a wide range of heat resistant mechanical applications. Spark plug electrode alloys . . . which have become universally accepted standards of quality and durability. Alloy 717 . . . used in facing engine valves for longer life and improved service. And, of course, there are Hoskins Chromel-Alumel thermocouple alloys for industrial furnaces and jet engines . . . unconditionally guaranteed to register true temperature-e.m.f. values within close specified limits.

HOSKINS

MANUFACTURING COMPANY

4445 LAWTON AVENUE • DETROIT 8, MICHIGAN

Chromel® NICKEL CHROMIUM WIRE

NOT JUST A BALL ○ NOT JUST A ROLLER ⊂⊃ THE TIMKEN TAPERED ROLLER ⊂⊃ BEARING TAKES RADIAL ↓ AND THRUST →|← LOADS OR ANY COMBINATION

When Should Alloy Steels Be Ordered to Hardenability?

This is the fifth of a series of advertisements dealing with basic facts about alloy steels. Though much of the information is elementary, we believe it will be of interest to many in this field, including men of broad experience who may find it useful to review fundamentals from time to time.

What is hardenability and how does it differ in carbon and alloy steels?

Hardenability can be defined as the capacity of steel to develop a desired degree of hardness, usually measured in depth. It is produced by special heating and cooling. Carbon steel, except in small sections, will normally harden to a depth slightly below its surface, while alloy steel can, under certain conditions, harden uniformly through its entire cross-section.

Surface hardness obtainable after quenching is largely a function of the carbon content of the steel. Depth hardness, on the other hand, is the result of alloying elements and grain size, in addition to the carbon present in the steel.

In general, where hardenability is the prime consideration, it is not too important which alloy steel is used, just as long as there is sufficient carbon present to give the prescribed hardness, and enough alloying elements to quench out the section. We might mention here that it is not considered good practice to alloy a small section excessively, since too free a use of alloying elements adds little to the properties and can, in some instances, induce susceptibility to quenching cracks.

There are, of course, numerous cases where factors other than hardenability must be considered; such factors as low-temperature impact, heavy shock, creep-resistance, and the ability to resist temper brittleness. Through-hardening, therefore, is not always desirable. For example, shallow hardening is often necessary in shock applications, because a moderately soft core is essential.

Our metallurgists will gladly explain where it is advantageous to order alloy steels to hardenability, and where it is preferable to order by analysis. They will also give you any help you may require in connection with heat-treating and machining problems.

And when in need of steels, remember that Bethlehem manufactures the entire range of AISI standard alloy grades, as well as special-analysis steels and all carbon grades. We can meet your needs promptly.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM ALLOY STEELS

BETHLEHEM STEEL

the Iron Age

Vol. 174, No. 3, July 15, 1954

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DIGEST of

NEWS DEVELOPMENTS

COMPETITION CUSHIONS STEEL PRICE HIKES — P. 59
Most manufacturers will hold the price line despite higher steel costs, a coast-to-coast IRON AGE survey shows. Competition and sales resistance are potent curbs and are making the steel price boost reaction milder than anticipated. But there will be rises as industry adopts the new wage "pattern."

WHAT 100 NEW WORKERS DO FOR A COUNTY — P. 65
Impact of 100 additional workers on the business life of a small community is outlined in a recent survey by U. S. Chamber of Commerce. Primary result is a population boost of 296—or 112 new households. Providing for needs and wants creates 74 non-industrial jobs. Dollarwise, impact is more impressive.

RENEGOTIATE LABOR PACT OR FIRM GOES BUST—P. 67
Comparatively small plant holds a key spot in labor relations as Pressed Metals of America, Inc., stands on the principle of a new labor contract or liquidation. Issue is whether firm can negotiate a new contract in face of financial trouble when present pact damages competitive position.

CHEVROLET SOLVES PLASTIC BODY PROBLEM — P. 70
Plastic car bodies by the millions may not be too far away. GM's Chevrolet Div. engineers have cut the time for forming and hardening of plastic sports car bodies from over 24 hours to a matter of minutes. Process sprays glass fiber and resin onto form, sets final shape in dies under heat and pressure.

SEE EASING OF UNEMPLOYMENT PROBLEM — P. 77
Latest figures on unemployment show jobless total increased 42,000 between May and June, but this is far less than usual jump of 300,000 customary for the period. Employment in June rose 979,000 to put the total at 62,098,000, not far from the '53 peak of 63.4 million. Improvement also seen in inventories.

DEFENSE THINKING ENTERS NEW PHASE — P. 85
New defense thinking means there will be less "saber-rattling," more stress on a pickup in the tempo of the defense program. Administration sees no easing of Red aggression, won't go along with Britain's get soft view. Ike has backing of leaders in both parties in opposition to admitting Red China to U. N.

the Week in Metalworking

ENGINEERING & PRODUCTION

INDUSTRIAL MOVIE MADE ON LOW BUDGET — P. 105
There's no mystery to making a good industrial movie on a low budget. Here's how a steel mill turned a story idea into a 16 minute sound film hit in just about 30 days—at a total cost of $2500. Starting with a good story to tell, the company converted the story into a successful script with "see" and "hear" elements.

X-RAY FLUORESCENCE CUTS ANALYSIS TIME — P. 108
X-ray fluoresence, used in combination with other standard chemical analysis methods can sharply cut analysis time. Routine analyses for iron, chromium and cobalt in highly alloyed metals are being made by this method. Day to day reproducibility is good. Time required for analysis is sharply cut.

CARBIDES MILL STRUCTURAL MEMBERS FASTER—P. 111
Until recently big rotary planers were the best answer to machining the ends of steel beams and girders. Now a small conversion unit can be adapted to a standard planer bed for cutting up to 20 times faster. It permits use of carbides in machining structural parts. Blades, turning at high speed, give improved finish.

HOW PREVENTIVE MAINTENANCE CUTS COSTS—P. 114
To handle expanded production schedules, Buick Motor Div. requires nearly 40 miles of conveyors. To cut downtime, these are first engineered for the specific job. Then, to keep the conveyors in good operating order, responsibility for upkeep is assigned to specific individuals. It works and saves money.

MACHINE MAKES LARGER AL DIECASTINGS — P. 118
The trend to larger diecastings, gaining ground with development of both improved methods and markets, has received another shot in the arm with a new big diecasting machine. Aluminum castings up to about 75 lb can be cast on the new machine. With zinc, castings to 200 lb are predicted.

NEXT WEEK—POWDER AND METAL CUTTING PROBLEMS
Iron powder, fed into an oxyacetylene flame, oxidizes rapidly and greatly increases flame temperatures. Tough refractory oxides are easily melted, permitting flame attack on the base metal. Process can be used for cutting, scarfing, gouging, lancing and washing. Its development marks a step forward in powder processes.

MARKETS & PRICES

WILL HIGH COSTS STUNT TANTALUM GROWTH?—P. 63
Use of tantalum has increased rapidly but fabricators are worried over high ore costs. They blame the government for passing along cost of bonus paid for mining tantalum. Industry proposes different program to encourage ore prospecting and development. Claim need is vital or growth will be slowed.

UNEVEN AUTO SALES RACE IN FIRST HALF — P. 80
Ford and GM combined produced over 81 pct of all U.S. cars during the first six months. Ford production up 40 pct over same '53 period. Independents in rough shape with production down 50 to 60 pct. Chevrolet cuts Corvette production by two-thirds, is now turning out only 300 per month.

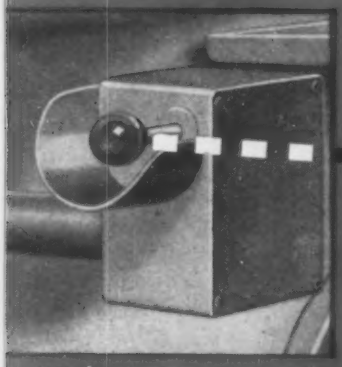
RELY ON TAX CHANGE TO END TOOL SKID — P. 91
Machine tool builders are hoping that liberalized depreciation allowances will stimulate sales of new machinery. Salesmen will stress the tax savings in the new faster writeoff bill now in Congress. Only differences between House and Senate versions must be ironed out. Passage probable.

STEEL MARKET DRIFTING IN SUMMER LULL — P. 153
Steel production is expected to gain a few points from the holiday low of last week. But July is shaping up as one of the deadest months of the year. It may be that no week in July will be so high as the June average of 70.3 pct of rated capacity. Since the dull month was expected, no one's alarmed.

SEE LITTLE REACTION TO PRICE INCREASES — P. 155
Consumers accepting price increases as inevitable to offset increased labor costs. Competitive market conditions plus uncertain aluminum price future may keep stainless prices at present levels. Market seen levelled-off but depressed. New auto models could boost demand in August if production isn't postponed.

HEAVY JUNE SHIPMENTS TRIM ZINC STOCKS — P. 156
First significant decline in more than a year was registered by zinc stocks in June. They tumbled from 209,828 tons at the beginning of the month to 201,055 at the end. Domestic shipments were 10,400 tons higher, export climbed 1600 tons and government account rose 3600 tons for a total increase of 15,673 tons.

Outstanding Time Saver...
...Outstanding ACCURACY



Single Control Lever

The New Cincinnati Magnetic Clutch and Brake, with its single, convenient control lever, gives the operator the fastest, simplest and most accurate control of his Shaper and converts waste time into productive time.

This powerful clutch and brake requires no adjustment, and has a long, maintenance-free life.

Write for Cincinnati Shaper Catalog N-5.

30% Time Saving

Shaping time on 7 internal oil grooves in these steel sleeves was reduced from 12.5 minutes to 8 minutes, by the Cincinnati Electro-Magnetic Clutch and Brake.

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THE CINCINNATI SHAPER CO.

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THE IRON AGE

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EPA NBP

How About the Business Outlook?

TODAY you must be a combination crystal gazer, statistician, expert on international affairs, exhaustive reader of the news and a keen observer of human behavior. Not to be most of these things at one time could cost your firm a lot of money.

Those who believed the "inside" information that there would be a negligible wage adjustment without a rise in the price of steel are out roughly around $3.30 a ton to the extent that they overcut their inventory. IRON AGE readers were warned long ago that wages and prices would go up.

Some people still insist that we are "in for trouble." Others say that there will be no real pickup in business. But it costs a lot of money to believe the worst—when the worst doesn't happen.

Business is on its way up. Here are a few reasons why we feel that way:

Employment: Latest figures show total is close to the peak; over 62 million. The increase in unemployment in June was far below seasonal expectations. Unemployment payments are down.

Easy Money Policy: No matter how you feel about it, the Administration has an easy money policy. Required reserves of Federal Reserve member banks have been cut. We are still operating on an unbalanced government budget. All that means more money in circulation—and controlled inflation.

Defense Outlook: If we are going to be tough and draw a line in Asia and Europe we will have to have more for defense than we are now spending. We are not going to make ourselves weaker in the face of today's worst world crisis—no matter what Washington says.

Election Year: Politicians don't change. Nobody's going to rock the boat.

Construction: Still increasing all along the line. It is as big a support and starter as the auto industry. Watch roadbuilding.

Farm Buying: Parity payments will be higher than expected. Rain has changed grief to hope. This means more farm spending for implements and autos later this year.

Another Wage Round: Steel pattern will be followed by other industries. Already has in some cases.

As we see it the economy is definitely on its way up. It will pay you to think this over.

Tom Campbell

Editor

Torture Test for Spring Steel



* Note severe bending parallel to the direction of rolling.

Again Proves SHARON Superiority

In the short space of less than 11-inches this piece of Sharon Spring Steel has been blanked, punched, drawn, twisted, folded and sheared — formed into precision fasteners — at speeds that test the imagination.

An ingenious seven-station progressive die does the job, but requires the finest in spring steels to get maximum efficiency, especially where bending parallel to the direction of rolling is required. That's why this concern, a major supplier of fasteners to the automotive industry, specifies Sharon Quality Spring Steel.

Sharon's consistent uniformity of analysis, hardness and size minimizes rejects — assures maximum life for expensive dies.

If you are a user of spring steels it will be well worth your while to specify Sharon Quality Spring Steel — another fine product by one of the world's largest producers of special steel strip.

SHARON STEEL CORPORATION
Sharon, Pennsylvania

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Type 430 Stainless Galvanneal® Coated sheets are available at any Sharon office.

Dear Editor:

Letters from readers

New England Salute

Sir:

Please let me add my voice to the chorus of praise for your outstanding reporting upon New England and its standing in relation to the entire country.

Your study destroys the disaster-monger's theory that New England's loss of textiles spelled its industrial doom. We have all felt that New England's demise like Mark Twain's, was to say the least, premature.

New Englanders are notoriously inarticulate about themselves and their achievements, and this worked to the advantage of those who, whatever their motives, distorted the facts about New England's health.

Your careful study and analysis and your eloquent presentation of the facts will gladden all who have our country's welfare at heart, as a thriving New England is an essential part of a sound United States of America.

Congratulations for a good job exceedingly well done.

J. H. DOWD
President

Johns Hartford Tool Co.
Hartford

Americans First

Sir:

After reading your editorial "We Are Americans First," it occurred to me that Americans who associate our country with victorious wars and marching bands, often overlook the real importance of our heritage. This means a sober and devoted appreciation for public education, civil and religious freedoms, free enterprise, and democratic procedures. Above all it means that when we see that American flag go by, we shall resolve that these good things should be extended to people everywhere. If these people are to understand us, we cannot merely wait. We must bend every effort to have them learn what Americans mean, and a mutual appreciation of problems is one of the ways to accomplish this.

ALLEN MADORSKY

Bond Steel Co.
Cleveland

Inert Gas

Sir:

In the May 27, 1954 issue of THE IRON AGE appears the article entitled "Inert Gas Gives Titanium Tubing Protective Weld Backing," pages 118 and 119.

Because of its interest, we would very much like to distribute this article to our members only and would, therefore, appreciate your permission to reprint for this purpose. Proper credit would, of course, be given.

J. R. DERRICKSON
Executive Secretary

Formed Steel Tube Institute
Cleveland

Tool Steel Directory

Sir:

Will you please advise when the 1954 edition of "Directory of Tool Steels" will be available? It is expected that we will require between ten and twelve copies, and you might advise your cost per copy.

N. M. CAMP
Purchasing Agent

Chase Brass & Copper Co.
Waterbury, Conn.

We expect to have the Directory available by September. The cost will be the same as the 1953 edition. Two dollars a copy; three for $4.50; and $1.00 each on orders for six or more copies.—Ed.

Profilscope

Sir:

Please advise whom we can contact for more information on the Diamond Die Profilscope, which was described in your June 10th issue.

We would be interested in a demonstration of the equipment if possible.

A. P. BARONE
Foreman-General Die Dept.

Anaconda Wire & Cable Co.
Sycamore, Ill.

For more details write to Max Davies, Public Relations Officer, British Iron & Steel Research Assn., 11 Park Lane, London W. 1, England.—Ed.

Furnace Layout

Sir:

It would be appreciated if you could forward to the writer twenty copies of the article "Centralize Atmosphere Generators to Improve Furnace Layout" by W. D. Latiano, which was featured in the May 27th issue of THE IRON AGE.

H. CORMIER

Canadian General Electric Co.
Toronto

Dornin Process

Sir:

I am interested in obtaining twelve copies of tear sheets of the technical article entitled "Mill Gives Dornin Process First Big Test." This article appeared in THE IRON AGE Vol. 173, No. 24, on June 17, 1954.

C. A. COLLIER
Superintendent

National Cylinder Gas Co.
McKees Rocks, Pa.



Which kind of Cold Rolled Strip Steel is best for You ?

CONSIDER SHEET COIL

—if variations in physical characteristics are permissible.
—if fairly heavy oversize gauge variations are not objectionable.
—if the fabricating operations are not too complicated and do not require intricate expensive dies.
—if a fine surface finish is not essential.
—if a good base for paint or enamel is desired.
—if you do not object to some "square footage" loss due to oversize variation.
—then Sheet Coil will probably be the most economical material for the job.

CONSIDER THINSTEEL

—if you must have a high degree of uniformity of chemistry and physical properties—and precision gauge tolerances.
—if you wish to keep die wear low, no oversize gauge variations.
—if you require a fine finish or a better base for plating.
—if you want maximum yield for "most finished parts per ton."
—if you want selected tempers for maximum strength and lightest weight.
—then you'll find Thinsteel the most economical material by far.



You can always count on Kenilworth helping you get the right steel for your requirements. Order Sheet Coil or Thinsteel and notice that each coil carries an identifying tag as pictured above. Call on Kenilworth, too, for your needs in Stainless Sheets or flat rolled Spring Steels (Annealed or hardened and tempered).

THE Kenilworth Steel co.
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KENILWORTH, NEW JERSEY

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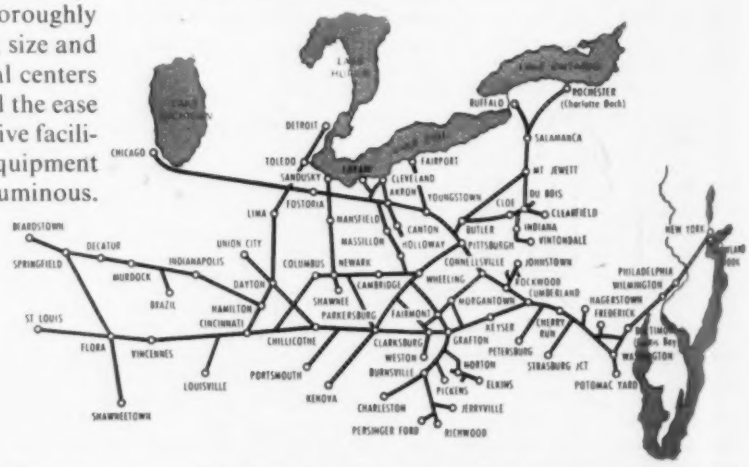


with a coal that's exactly right

Name your choice—in "Bituminousland" along the Baltimore & Ohio, we have it! Here Nature has stored a supply of economical heat and energy sufficient to last for centuries.

B&O Bituminous coals exist in wide variety. The mines that produce them are thoroughly mechanized so that costs are kept low, size and quality uniform. Nearness to industrial centers results in low transportation costs, and the ease of storing removes the need for expensive facilities. Furthermore, new methods and equipment have increased the burning value of Bituminous.

ASK OUR MAN! Let him direct you to the best coal for your needs, and explain proper firing methods. You'll be more than pleased at the improved efficiency, economy, and cleanliness of B&O Bituminous.



BITUMINOUS COALS FOR EVERY PURPOSE

LINKING 13 GREAT STATES WITH THE NATION

BALTIMORE & OHIO RAILROAD

Constantly *doing things*—better!

Fatigue Cracks

by William M. Coffey

The Big Story

Evening. This is your television world traveler, lecturer, author, acting corporal, economist, and famed news analyst, H. Calhoun Beaugard, Esq., KB, CB, B, bringing you the hot news of the day, today. Here's an H. Calhoun Beaugard special—

November 12, 1953—THE IRON AGE in an editorial today predicted that Dave McDonald, steel union chief, will be a tough man to deal with . . . that demands will be made for the usual substantial wage increase . . . that now is the time for management to think these prospects over and be ready for a tough session with labor in 1954.

May 5, 1954, 7 a.m.—An IRON AGE release today predicted that eventual agreement will provide (1) a token wage, (2) higher pensions, (3) improvements in social insurance, and (4) no guaranteed annual wage. Emphasis will be on the "package" which may cost in the neighborhood of 5¢ to 8¢ per hour . . . a price increase would be likely to follow.

June 9, 1954, 7 a.m.—An IRON AGE release today predicted that the price for peace in steel this year will probably be in the neighborhood of 5¢ to 8¢ per hour.

June 10, 1954—THE IRON AGE in an editorial today expected a last ditch stand on a wage increase and on a significant pension and health plan betterment . . . that if wages go up so will prices.

June 16, 1954—Steel prices may soon become as hot an issue as the wage question, according to an IRON AGE release . . . it is expected that the wage settlement finally reached will call for a 5¢ to 8¢ "package" . . . to be followed by a price increase averaging about $2 to $3 a ton.

June 29, 1954, 10 a.m.—Here's a special bulletin from THE IRON AGE. "Settlement has been reached. It is 5¢ an hour. This, plus pension and health concessions, will cost steel companies 10¢ to 12¢ an hour. The steel price increase to cover these higher costs will average $3 to $4 per ton, with some higher than the average and some lower."

June 29, 1954, afternoon—The steel wage negotiators have just confirmed THE IRON AGE releases of November 12, May 5, June 9, June 10, June 16, June 30, and the release of this morning. *"We have settled on 5¢ an hour wage increase."*

June 30, 1954, 7 a.m.—According to today's IRON AGE release, steel users will kick like steers, but within the next week or 10 days steel price tags will go up by an average of $3 to $4 a ton.

July 1, 1954, afternoon—Steel companies have just announced this afternoon that the steel price increase to cover higher costs will be approximately $3 per ton, with some higher than the average and some lower. Full details can be found in today's issue of THE IRON AGE, *printed two days ago.*

* * *

Puzzlers

From the above you must suspicion that your ffj (favorite family journal) editors are pretty superlative stuff. It's tragic, however, for your ffj that none of this stuff has rubbed off on us—a point which we've been making for 2 years. To add emphasis we report that we were off base on the solution to the flagpole-triangle puzzle. Commander W. W. Witter, United States Navy and Mr. L. G. Bayrer convinced us that the darn pole had to be 2.3094 ft inside from where we said it should be. Our apologies to all who said the same. Charlsie, please, for our sake, put Len Bickel back on the puzzle club payroll. He was right and we were wrong.

New Puzzler

A king, his daughter and a page were imprisoned in a tower, in which the only opening to the outside was a window 100 ft high. Outside the window was a rope a little more than 100 ft long, which went over a fixed pulley.

To each end of the rope was attached a large basket, so that when one basket was on the ground, the other basket was opposite the window. A person could sit in either basket, but could not pull either part of the rope, or help another in the basket. In short, either basket could be made to ascend only by overbalancing it.

The king weighed 195 lb, the princess 105 lb, the page 90 lb. They found a chain that weighed 75 lb.

When any person was in either basket, the weight in the descending basket could exceed that in the other basket by only 15 lb, otherwise the descent would be too rapid. Furthermore, only two persons, or one person and the chain could be in the basket at any one time.

How could they manage it so that all three could escape and take the chain with them?

now you can produce trouble-free,

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Manganese	53%
Sulphur	32%
Carbon	.22%
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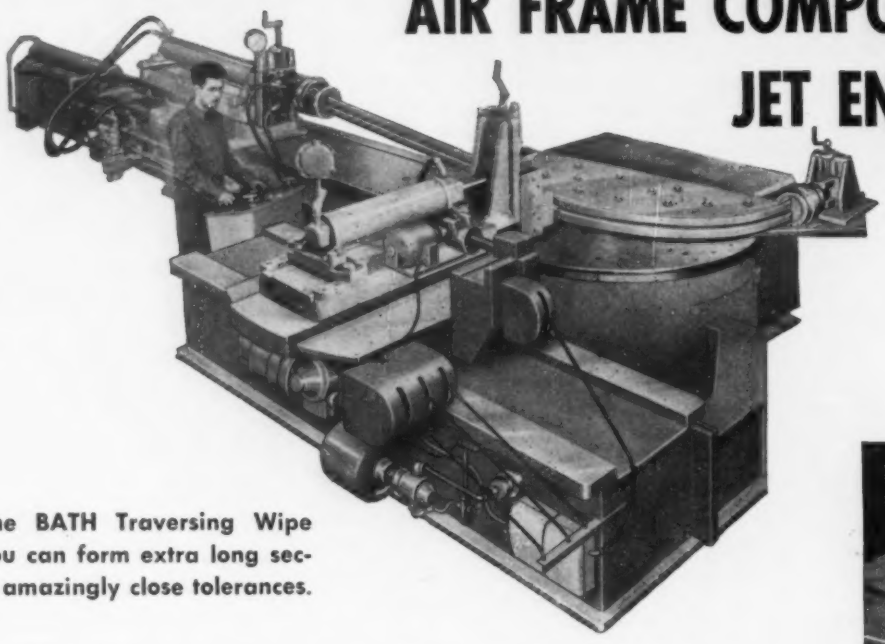
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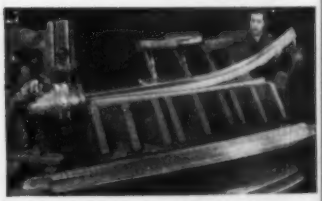
STRETCH FORMING

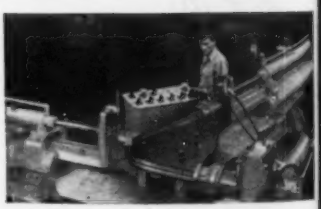
AIR FRAME COMPONENTS AND JET ENGINE RINGS

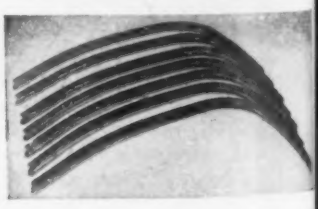


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1. ***ACCURATE PARTS*** **in hard to work alloys at a fraction of the time and cost involved in machining castings or forgings.**
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Competition Cushions Steel Price Hikes

Most manufacturers will hold price line despite higher steel costs, Iron Age survey shows . . . Competition, sales resistance potent curbs . . . Wage "pattern" hurts most—*Staff Report*

The steel price increases will stick. Reaction is milder than had been expected. Competitive conditions and sales resistance will force most manufacturers to hold the price line.

These are conclusions drawn from a broad check by IRON AGE editors in major industrial centers across the nation. There are, of course, exceptions to all of these conclusions. But this is the way sentiment among the nation's manufacturers shaped up one week after the steel price increases.

These prices will go up: Steel warehouse items, fabricated steel products, fasteners, wire rope.

In addition, there will be increases in seemingly unrelated products because of higher wage scales resulting from the steel "pattern" settlement. In the forefront of this group is aluminum. Refractories prices may also be increased as a result of new wage agreements.

Higher steel costs and wage increases together will bring about a stiffening of price structures throughout the metalworking industries. This may ultimately reach all the way back to the mines.

Prices will hold, at least for the present, on these products: Heavy industrial equipment, electrical machinery and machine tools, autos, appliances, and most consumer products.

In the long run many in industry realize that this increase will go the way of all others. It will either be made up by the steel industry and its customers by means of better efficiency and increased productivity, or it will be reflected in higher prices to consumers.

Complaints about the steel price boosts are milder than they have been at times in the past. Those who do complain of higher prices generally do not blame the steel producers, although there is plenty of disgust over the eighth annual round of wage-price increases.

Stiffest price resistance is shaping up in Detroit, where there is some determination to attempt to breech the steel price front.

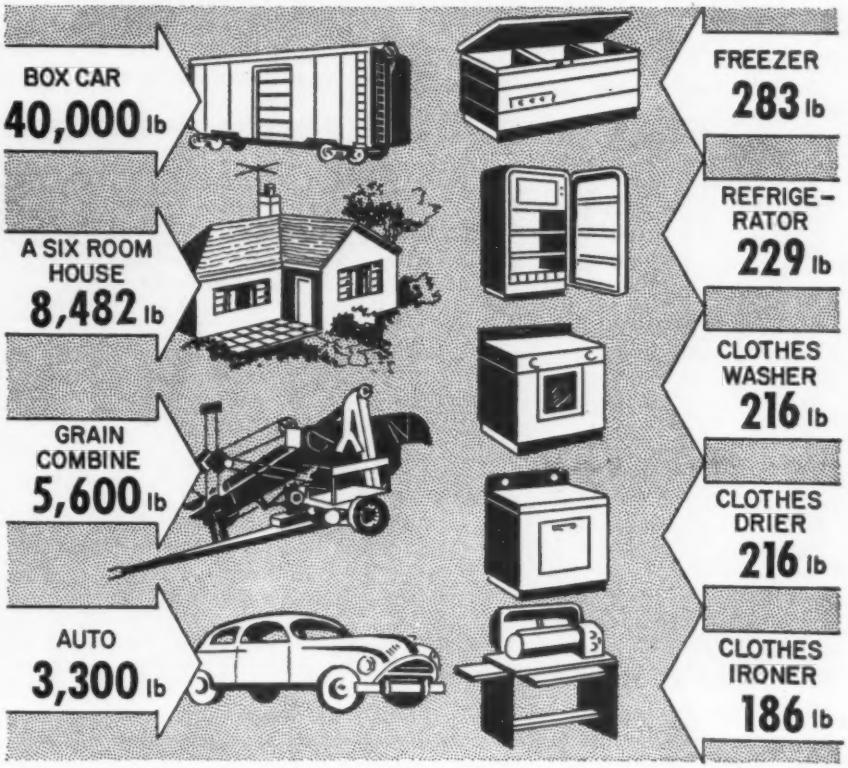
Following are condensed reports from IRON AGE district editors on reaction to the steel price increases:

Chicago . . . Steel warehouse chains are moving rapidly on new pricing schedules which will reflect increases in mill prices. Independents are expected to quickly meet the higher prices. Early reports indicate warehouse price increases will range mostly between 18¢ and 23¢ per 100 lb.

Manufacturers generally feel they ought to pass on steel cost increases to their customers. But most believe it will be extremely difficult, if not impossible, to do so.

Steel fabricators will be able to pass on at least a portion of the increases in escalator clauses. But they point out that, with order backlogs dropping, new bidding

Steel Needed for Common Items



will be extremely competitive. By fall they expect to absorb more costs.

Appliance people are studying the steel increases; they expect they'll have to absorb the greater share of the cost. Prices aren't expected to be advanced for at least the next 30 days. And if present market conditions persist they might absorb the cost completely.

Farm equipment people can't see the wisdom of raising prices in the current market. However, they will be selling through fall months equipment made with older, lower priced steel. Tentative outlook for next spring: no increase, even though they'll be using higher priced steel purchased this fall.

Some increases in fabricated steel products are already in the works.

Pittsburgh . . . Steel producers are confident the new price line can be held. They expected some squawks, but so far reaction has been milder than they had anticipated.

Increases are expected to be reflected later in fasteners, and other fabricated steel products. Refractories prices may also be increased following new wage contracts. The same is true of aluminum.

Observers here expect a general stiffening of prices in metalworking industries all along the line. This may ultimately reach all the way back to the mines.

Westinghouse Electric Corp., biggest steel consumer in the area, says it is impossible to predict now what they will do about their steel cost increases . . . but probabilities are they will be forced to pass them along to customers.

East . . . Although the market is anything but strong in this area, the steel price increase will stick. Manufacturers had pretty well anticipated the wage-price agreement, and were surprised only by the amount of the increases. There is more concern over the "pattern setting" wage agreement than there is over price increases. Cost of following the new wage pattern will be much heavier than cost of the steel price increase.

Nobody wants to absorb the higher steel costs, but most manufacturers feel that they will be forced to do so. A few "hoped" they'd be able to pass on part of the higher costs to their customers.

A construction company said it would absorb the increase, adding that it was doing this in a bid to swing a few more jobs. It is much more concerned with labor costs.

Most makers of machinery and machine tools will absorb the steel increases. Labor is a much bigger part of their costs. Their biggest problem is selling, and they sell mainly on quality and production.

A producer of stampings was undecided. Its profit margin was already dangerously thin. It felt it should pass on the increase, and it would try to do so. But it needed orders.

Warehouses will stick to their retail-store type of percentage markup. But price cutting among importers and independents may be expected to continue.

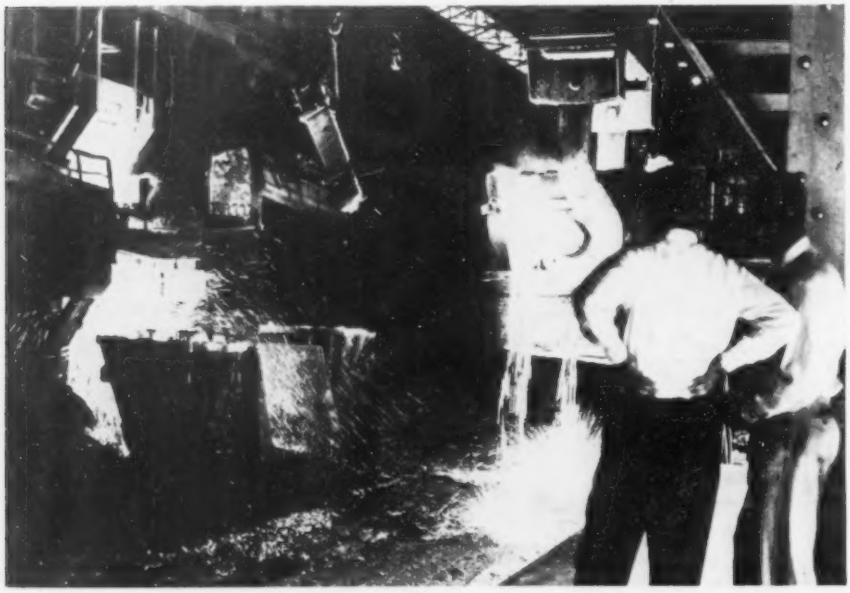
Cleveland . . . Steel consumers in this area do not view the steel price increases as a calamity. Over 75 pct of consumers queried say increases in unit costs will be superficial. A few buyers say they will be forced to pass increased costs on to their customers but for the majority, there will be a belt tightening period which will call for absorbtion.

Some large producers whose materials costs play a big part in the production equation may be harder hit than small manufacturers who spend more of their time wrestling with labor costs. Competition throughout industry will force even the big firms to absorb. The trend here as elsewhere is to either keep prices stable or effect reductions.

Consumers generally are not critical of the steel companies for raising prices. Usual cries of poor timing are not heard because manufacturers believe steel firms had no alternative, that they will be doing some absorbing themselves.

Some manufacturers are angry about the wage price increase, asking "When will the ruinous annual wage increase habit be halted and wages geared to the ebb and flow of business conditions?"

Detroit . . . Most important from the Detroit standpoint is the auto industry. It may be con-



LADLE OF STEEL from one of Granite City Steel Co.'s new openhearth furnaces heads for the ingot molds during recent inspection tour.

cluded that automakers (1) will not raise prices as a result of the steel price increases and (2) will fight hard to beat prices back to former levels.

From the price standpoint, it is obvious that the auto market can't stand price increases at this time. Independents can't sell cars at their present price levels and even the biggest sellers in the Big Three are finding it hard going as the year goes into its second half.

Auto price increases would be fought by both dealers and customers.

A top purchasing executive of a major auto company told IRON AGE in so many words that "unless business shows a tremendous increase, steel can't make the price increases stick."

His major reason for making that statement is the inventory situation that the auto industry finds itself in now. Many auto companies don't have to buy steel until 1955 models come out. By that time some of the steel companies will be eager to come down for some fat automotive tonnage, he thinks.

This is a viewpoint that is shared by most people in the auto industry, although not many are as confident as this man.

Actually, the auto industry does not fight a price increase openly with charges, statements, threats and the like. But an individual auto company will wait until it has a sizeable specification to place, then go to individual steel companies for quotations. In past easy markets, this has led to price cutting. Whether it will now remains to be seen.

Producers of consumers goods such as automobiles, appliances and other durables apparently will hold the line, although direct statements aren't being made by anyone.

Stampers, fabricators, platers and manufacturers of goods in which the price of steel is a dominant factor will try to pass on as much as possible of the increase. This will be met by considerable resistance from purchasers who will be unable to raise their finished market prices. The competitive situation here may force these suppliers to absorb some of the increase, but not all.

West Coast . . . There will be no early rash of price increases because of higher steel costs. For the present, at least, higher costs will be absorbed.

Rheem Manufacturing Co., a leading appliance, ordnance, and drum manufacturer, said no firm policy has been established. . . . But because of competitive conditions, increases are doubtful at the present time.

Steel:

U. S. Steel Export Co. sets new East Coast prices.

Revised export price bases for several steel items were announced last week by United States Steel Export Co. Prices include freight from producing mills to New York, Philadelphia and Baltimore. Extras apply. Export prices for steel products not listed here remain unchanged.

CARBON STEELS	$ Per Net Ton
Billets, blooms, slabs	
rerolling	74.00
forging	88.00
Tube rounds	106.50
Standard Rails	95.70
HR bars, small shapes	96.80
Skelp	90.40
Structural Shapes	97.00
C B sections, bearing piles	97.00
Plates	96.60
Floor plates	117.60



Sheet piling	113.40
Concrete rein. bars	87.60
Cold-finished bars	120.80
Vitrenamel sheets, 12 ga.	124.60
Electrical sheets	194.00
Cold-rolled strip	127.80
Tight cooperage hoops	102.00
WIRE PRODUCTS	
Wire rods	97.20
Bright nail wire	118.80
Black annealed wire	133.80
Galvanized plain wire	144.80
Barbed wire	
Glidden 4 pt. 3 or 6 in.	164.60
Iowa 4 pt. 3 or 6 in.	164.60
Waukegan 4 pt. 3 or 6 in.	166.60
Lyman 4 pt. 5 in. 7.17 per 80-rod spool	
Nails, bright	142.00
Staples, bright	143.60
ALLOY STEELS	
Billets, blooms, slabs	96.00
HR bars	106.00
Plates	128.00
Structurals, bar shapes	116.00
HR strip	146.40
Cold-finished bars	137.00
HIGH STRENGTH STEELS	
COR-TEN	
Plates	141.00
Structural shapes	140.00
CB sections	140.00
HR bars, bar shapes	141.00
Man-ten	
Plates	117.60
Standard structural shapes	117.00
CB sections	117.00
HR bars and bar shapes	114.00
A-R Steels	
Plates	119.60
HR bars and small shapes	121.00
HR sheets	119.00
HR strip	116.60

AMERICAN STANDARD PIPE T & C	Pct. Discount
Buttweld, 2½ & 3 in.	
Black	31.445
Galvanized	15.195
Buttweld, 3½ & 4 in.	
Black	22.695
Galvanized	5.945
Seamless, black	
2 in.	7.865
2½ in.	11.865
3 in.	14.365
3½ & 4 in.	18.7
5 in.	17.95
6 in.	20.45
Seamless galvanized	
2 in.	+7.135
2½ in.	+4.885
3 in.	+2.385
3½ & 4 in.	1.95
5 in.	1.20
6 in.	3.70

Mining:

Test new explosive at experimental taconite mine.

Taconite is considered by many to be the salvation of the Mesabi Range as the high-quality iron ore there peters out. Economic use of the lower-grade taconite presents many technical problems—and because of its extreme hardness, getting it out of the earth inexpensively is one of the hurdles.

Answer may be heard in future echoes of a blast that was set off at Iron Mountain, Minn., last November. It was a test shot at the Pilotac Mine of Oliver Iron Mining Div. of United States Steel Corp. It was unusual in that it was the explosion of specially treated carbon saturated with liquid oxygen—a combination long known for its high power and long considered too hazardous to use.

Known as Glmite, the explosive was originally developed by a research team of the Glenn L. Martin Co. Team was headed by Lester P. Barlow who purchased the rights and established the Glmite Corp. Glenn L. Martin remains as board chairman.

Used Safely for 13 Years

Unusual feature of the explosive, aside from its high power, is that it's claimed to be perfectly safe—and Glmite Corp. is ready to back up that claim with demonstrations. Tests include fire, severe impact and rifle fire.

As a type, liquid oxygen-carbon explosives have not yet been accepted as safe by the Bureau of Mines. But Enos Coal Co. has been using the Glmite No. 1 formula for 13 years without any kind of explosive accident.

Explosive used in the Oliver test was Glmite No. 2, a lignin carbon containing 8 to 10 pct phosphoric acid to make it fire resistant. This was dehydrated to convert the acid to an abrasive which accelerates the speed of detonation. Just prior to blasting, 15-lb bags of this were soaked in liquid oxygen.

"Fragmentation Was Excellent"

In the test, nine bags were loaded in each of nine 25-ft deep holes in a 20-ft burden. Holes were 24 ft apart in two rows of five and four each. Because of oxygen evaporation, weight of explosives could not be accurately determined. However, weight of each bag at charging was estimated at 48 lb. An estimated 6 lb of oxygen evaporated between charging and detonation, making the total weight of explosive fired approximately 3450 lb.

Tamping was placed in bags, leaving it porous to permit escape of vaporizing oxygen. First row of five holes was fired simultaneously, followed by the second row of four a fraction of a second later.

From the Oliver report: "Fragmentation of the blast was excellent and very uniform (see pictures). It is difficult to compare this fragmentation with previous Pilotac blasts made with standard explosives as the L.O.X. (liquid oxygen explosive) blast was the first open face blast made at Pilotac. Fragmentation was, however, superior to any of the sinking cut blasts."

Titanium:

GSA funds Horizons Titanium "Process A" pilot plant.

Government funds are helping to move electrolytic refining of titanium out of the laboratory into the pilot plant.

General Services Administration has signed a contract granting Horizons Titanium Corp., Princeton, N. J., $564,300 to build and operate a pilot plant near Stamford, Conn., to test a new titanium production method, "Process A." Contract, calling for a year's test operation, was signed by Edwin T. Goodridge, president, and Roland G. McAllen, secretary of Horizons.

"Process A" involves the electrolytic reduction of potassium titanium fluoride. Yield is titanium metal with Brinell hardness ranging from 105 to 140, in non-pyrophoric granules. Mr. Goodridge told THE IRON AGE that the purity of the metal compares favorably with that produced by any other method. Purpose of the new pilot plant is to prove out engineers' cost estimates.

Horizons is also investigating application of its method to other metals. Particularly promising results have been obtained with titanium and zirconium, Mr. Goodridge reported.

If the process is introduced commercially, whether by Horizons or sold to another firm for production, Horizons is required to repay the government grant.







UNIFORMITY OF ROCK is apparent in photos taken of test blast. Pictures were taken from one point.

TANTALUM: Will Costs Stunt Growth?

Use has increased rapidly, but fabricators worry over high ore costs . . . Blame pass-on of government stockpiling bonus . . . Offer alternate ore program—By *K. W. Bennett.*

With an announced goal of 15 million lb of tantalum-bearing ore for the government stockpile, and perhaps 4 million lb accumulated thus far, tantalum ore users will begin to feel an increasing raw materials price pinch.

Not well known despite its comparatively rapid growth (mostly 1939 to date) the refractory metal is fabricated into economic evaporators, various kinds of heaters and condensers for use in highly corrosive atmospheres; in electronic tube parts. As tantalum carbide it appears in dies and metal cutting tools and is moving strongly into telephone, radio, and TV applications.

Millions of Capacitors

Industry customer list, in order of descending volume, would read, chemical industry, electronic tubes, capacitors for radio, telephone and TV, with surgical running a slow fourth.

In 1949 came the tantalum capacitor, a tiny condenser with a 30-year useful life that is destined to play handmaiden to the more generally known transistor, can be expected to grow with it. The chemical industry, intrigued by the possibilities of a metal that in most corrosive acid processes was estimated to have a useful life of 800 years, has boosted its tantalum use by an estimated 1000 pct since 1939.

Fansteel Metallurgical Corp., N. Chicago, believes tantalum capacitors are already selling in the millions. Fansteel, as both fabricator and basic metal producer, should have a clear picture. If 1948 were the base year and were called zero, then 1949 would see Fansteel tantalum capacitor output at 1.0: 1950 at 1.5: 1951 at 4.5; 1953 at 15. The year 1954, at a conservative estimate, should see the curve hit 21.

For the same firm, using 1948 again as the base year and output of tantalum for the chemical industry as "100" in that year, then 1951 would see a climb to 300-plus; 1952 to 400-plus; 1953 a drop to 350-plus; estimate for 1954 a drop to 335.

Most Ore Imported

Tantalum in its raw state is found invariably with columbium, and is used as an alloying ingredient. Bulk of the ore is shipped in from South America, Africa, and Australia. Both metals are on the critical list. In war-time, tantalum could substitute, point for point, for columbium in high temperature alloys.

Imports amounted in 1949 to 136,000 lb. In 1950 the figure rose to 328,728 lb (in the same year shipments of the ore mined in the U. S. amounted to 2700 lb), and in 1951 imports fell to 238,445 lb.



TUBE SHEET is tantalum in this piece of special chemical equipment.



ROLLING Tantalum down to foil gage is job for a real craftsman.

Shipments of domestic ore concentrates are more revealing. In 1943 about 9411 lb of domestic ore concentrates were shipped for separation. In 1947 the figure had fallen to 3259 lb; in 1951 to 925 lb.

Ask Bonus Limits

Understandably worried, the Federal Government began stockpiling ore for these two metals in 1952. By November, 1953, 1,923,027 lb had been accumulated. In February this year the figure reached 3,485,507 lb. The program was designed to give the nation an ample wartime stockpile, but more important, to expand sources of supply of the two difficult-to-come-by metals. It was initially scheduled for a 5-year run, but there's reason to believe the program may now be regarded by at least some Washington thinkers as an open-end affair to run until 15 million lb is reached.

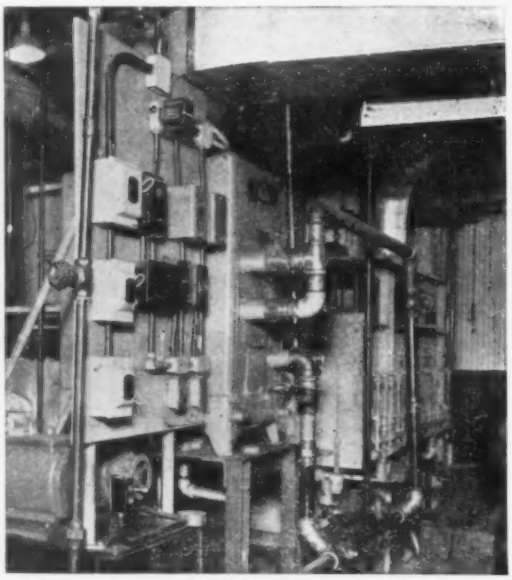
The government set a bonus price atop a new base price in October 1952, announcing its 15-million-lb stockpile goal and a 5-year program that was scheduled to come to a halt Dec. 31, 1956.

Effect of the price increase was to boost the going price from $3-$5 to $10-$15 per lb. A suggestion from the tantalum-columbium in-

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dustries, and a good one, was that the government by all means encourage ore producers, and add to its stockpile. But avoid upsetting the domestic market by paying bonus prices (1) for tantalum-columbium ores from new sources, or (2) for poundage produced over and above a normal base period output. The stockpiling plan, however, as finally executed, called for bonus payments on all ore produced, with the government buying it, users repurchasing it without being required to pay the government bonus.

Guaranteed Price Hurts

The plan was effective until February of this year, then went sharply askew. At that time General Services Administration announced that, in the interests of economy, all users would have to pay the going "market" or government price, including bonus. The government continues to take all the columbium-tantalum ore, foreign or domestic, it can get. The repercussions developed slowly but are becoming noticeable at last. Though fabricators of tantalum have held price advances to 10 pct on nearly all items, it's been necessary for them to absorb a good share of the increased materials cost.

Stockpile Tonnage Rises

The government expansion of its stockpile and sources of ore supply is working, as evidenced through the sharp increase in stockpiled tonnages during latter 1953-early 1954. But the government-sustained price is not helping tantalum fabricators, who recently emerged from an expansion period. The industry's own suggestions for encouraging ore location and development, advanced in 1952, seem to offer the best compromise.

Without a compromise tantalum fabrication is in for a minimum period of 2 years of sharp increases in raw material costs. On fabricators' sayso, it's a 300 pct advance in raw material price. Something will have to give—or tantalum development will start to skid.

Aluminum:

Will grant tax writeoffs to up forging capacity.

Government will grant fast tax depreciation allowances in an effort to boost aluminum forging capacity 27 pct by the end of 1955 because existing capacity would fall short of meeting defense needs in time of all-out mobilization.

Office of Defense Mobilization calls on producers to raise aluminum forging capacity 54,125 tons above present capacity of 197,950 tons. Tax benefits will permit a firm to write off in 5 years a substantial part of the cost of new plants and equipment, instead of the present 20 to 25 years.

The new "interim" expansion goal has no relation to the "third round" expansion of aluminum ingot production, which has been abandoned because of the healthy status of the aluminum ingot stockpile.

Facilities in the program include:

(1) Medium Forging Presses—Expansion 6950 tons of forgings
Hydraulic Presses—1500 tons to 3000 tons
Hammers—6000 lbs to 18,000 lbs
Mechanical Presses—1600 tons to 6000 tons
Impact extrusion presses of 1000 tons or more capacity, with minimum working stroke of 20 in.

(2) Upsetter Forging Presses—Expansion 8775 tons of forgings
10-in. upsetters

(3) Large Forging Presses—Expansion 38,400 tons of forgings
Hydraulic Presses—over 3000 tons
Hammers—over 9 tons
Mechanical Presses—over 6000 tons

(4) Heat-treating facilities capable of processing 100 pct of the finished capacity are required.

Necessary housing and complimentary equipment for the listed items are included in the goal.

Also included are facilities as may be necessary to provide heat treatment of forgings produced from presses already installed and in operation.



When 100 New Workers Move In . . .

Impact of 100 additional industrial workers on the business life of a small community is outlined in a recently completed U. S. Chamber of Commerce survey embracing 9 counties scattered throughout the nation.

Primary result is a population increase of 296, which in terms of family units means an addition of 112 households. To provide for the needs and wants of the industrial workers and their dependents, 74 non-industrial jobs are created.

Dollarwise, the contribution of the 100 extra paychecks is impressive. Personal income increases by $590,000 and is channeled into added bank deposits to the tune of $270,000. The balance, boosted through credit buying, goes to retail sales which jump by $360,000. Of this amount, $70,000 per 100 workers went to grocery stores. This was the largest share. Next ranking beneficiaries were the auto dealers who received an additional $50,000; dry goods and variety stores followed with a joint $45,000 increase, while eating and drinking places take in $30,000 more.

Survey, which covered counties in Alabama, Arkansas, Georgia, Louisiana, North Carolina, Pennsylvania, South Carolina, Tennessee and Virginia, selected areas which were neither part of nor adjoining cities.

The effects of the added industrial employment plus population increase materially changed the distribution of occupations in the counties surveyed. Between 1940 and 1950, period covered by the survey agricultural employment decreased by 30 pct, in part a result of the shift of working population from farm to factory, and to a considerable extent reflecting the rapid mechanization of agriculture and the consequent reduction in farm labor requirements.

An increase of 25 pct in the number of construction workers was noted, exceeded only by a 33 pct upturn in the number of persons employed by retail merchants. Transportation employment expanded by 13 pct, while professional services involved 14 pct more people.



GSA, Dow Sign Titanium Boost

Dow Chemical Co. has signed a contract with General Services Administration to expand its titanium sponge production at Midland, Mich., by 1800 tons a year.

Contract calls for Dow to increase capacity to produce 1.5 tons a day by Jan. 1, 1956, and 5 tons a day by the following July. Dow, which uses a magnesium reduction process, has been producing 600 lb a day at Midland while experimenting with its reduction process.

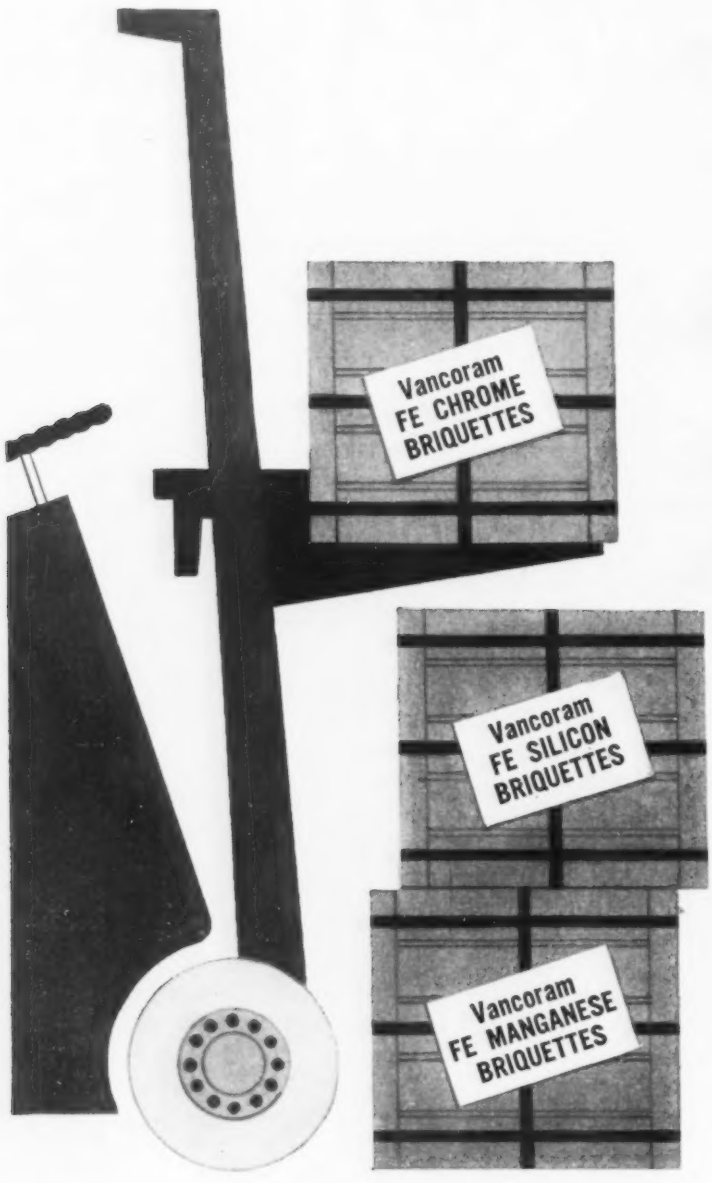
GSA may purchase a maximum of 2 million lb by July, 1956, if the company does not find other markets, or if the agency exercises its options for stockpile needs. Under the contract, Dow must keep the rated capacity of the plant intact for 5 years after the contract expires.

Latest contract brings the nation's titanium capacity to 15,000 tons annually.

Save 5 ways with pallet boxed shipments

VANCORAM BRAND

FERROCHROMIUM, FERROSILICON, FERROMANGANESE BRIQUETTES



Now—

You can save time and money through...

1. EASIER HANDLING—Pallet boxes for Vancoram Briquettes and ferro alloys have been especially designed for safe, easy handling. Constructed of sturdy hard wood and tied with strong steel strapping—the chance of breakage is minimized.

2. MORE EFFICIENT STORAGE—The design and strength of Vancoram Pallet boxes permit safe multiple stacking indoors or out, which may not be feasible with more flimsy construction.

3. READY IDENTIFICATION — Pallet boxes of Vancoram Briquettes and ferro alloys are easily identified by the same plain marking and color-coding identification labels used on Vancoram Drums.

4. LESS CHANCE OF CONTAMINATION—Material confined to its own container rather than unwieldly bulk handling.

5. FASTER INVENTORY — Has the advantages of packed shipment in easy, quick inventory.

Besides briquettes, most other Vancoram ferro alloys are available in economical, easily-handled pallet boxes — another Vancoram service to you.

Producers of alloys VANCORAM metals and chemicals

VANADIUM CORPORATION OF AMERICA

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CONTRACT: Renegotiate or Bust

Pressed Metals insists that a new labor pact is essential to avoid liquidation . . . Claims labor costs cost new business . . . Automotive lag a body blow—*By R. D. Raddant.*

A comparatively small plant at Marysville, Mich., holds a key spot in labor relations as the Pressed Metals of America, Inc., stands on the principle of a new labor contract or liquidation.

Issue is whether the company can negotiate a completely new contract in the face of financial distress when its present labor contract places it in an unfavorable competitive position in bidding for new work.

Blame Labor Costs

The company, like many automotive parts manufacturers, lost business when its two big customers, Ford and Chrysler, decided to manufacture their own parts instead of relying on suppliers. In this instance the parts were front wheel suspensions. The business was discontinued when the assemblies were redesigned.

"The loss of the Ford and Chevrolet business and the further loss of volume caused by the lower production schedules of the automotive industry as a whole have hit the company hard," said J. D. Leighton, executive vice-president.

"We have tried to offset this loss by bidding on other types of work. Each time, we have failed to get the job because our bid was too high." He blamed the losses on high labor costs.

What They Want

The company now demands these concessions:

1. Declare null and void the present contract.
2. Establish a new agreement giving the company complete freedom to control its operations directly on a profitable basis.
3. The company must have the right to revise all piecework and hourly earnings for profitable operations.
4. The union must agree to withdraw all grievances.
5. The company must retain the right to discontinue operations at any time.

Asks More Facts

These proposals were contained in a contract offered the union, Local 689 of the UAW (CIO). They are now being studied by the local and the International union.

The union has indicated it would be willing to take some pay cuts to keep the company in operation, but has refused to give up union rights or withdraw charges pending against the company before NLRB.

"We are willing to take a pay reduction providing the company can prove to us that it is facing financial difficulty," said Harold C. Davis, president of the local. He said the company has refused to give the union facts and figures other than state that it is faced with financial difficulty. He also charged the company wants the right to assign jobs regardless of seniority.

In spite of the stern demands by the company, it concedes only a 50-50 chance of staying in business even if they are complied with. The company itself is sound, showed a dividend in 1953 and only a slight loss per share in the first quarter.



At its peak, Pressed Metals employed about 1000 persons. Current employment is about 450. Its area is already classified as a labor surplus area. But regardless of its small size, the import of the situation is national. Marysville may be a test case that could set a broad pattern.

Jurisdiction:

New rules exempt many small firms from NLRB control.

National Labor Relations Board adopts long-promised new rules removing thousands of small companies and their employees from the agency's jurisdiction. The new rules take effect immediately.

NLRB Chairman Guy Farmer estimates the new rules will eliminate 15 to 20 pct of the volume of cases handled by the Board in the past. Mr. Farmer repeatedly has said that "Uncle Sam's long arm has reached out to assert itself over too many labor-management disputes which should be settled at state or local levels."

Additional rule changes expected to even further reduce the Board's jurisdiction are under study, a spokesman says.

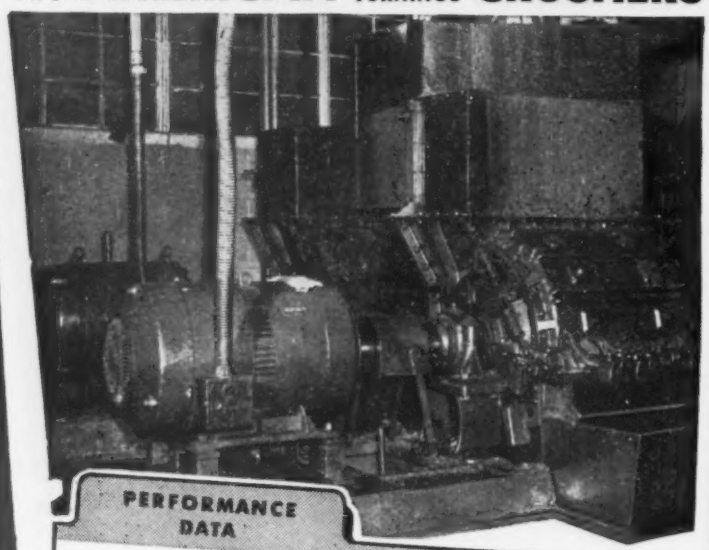
The new rule changes will:

Raise from $25,000 to $50,000 a year the direct outflow of interstate business required to bring a firm under NLRB; raise from $50,000 to $100,000 a year the goods or services that must be supplied to interstate commerce to bring a supplier under Board jurisdiction; require intrastate trucking companies and similar "links" in interstate commerce do at least $100,000 a year business for interstate carriers to merit Board action; abolish a provision for NLRB jurisdiction over general or public office buildings merely because tenants are under it, and require more than a franchise from a national enterprise before a firm comes under NLRB.

More "CRUSHING" FACTS ON American CRUSHER PERFORMANCE

Case History No. 15

$60,000 ANNUAL GROSS PROFITS! WITH TWO AMERICAN METAL TURNINGS CRUSHERS



PERFORMANCE DATA

TWO CRUSHERS:	Model 3800's
AVERAGE AGE:	35 months
MONTHLY TONNAGE:	1200–1500 tons metal turnings
PARTS COST:	to date, for both crushers: $1599.80
COST PER TON:	$0.03, including standby parts

THE experience of many blue chip manufacturers have shown that there are three important profit sources in every American installation: (1) American-reduced chips bring $4 more per ton on scrap market (2) Up to 50 gallons of recovered cutting oil per ton of reduced turnings (3) less storage . . . easier handling.

Let American show you how you can turn your scrap into profit.

WRITE for Bulletin: "Metal Turnings Crusher."



American PULVERIZER COMPANY

Originators and Manufacturers of Ring Crushers and Pulverizers

1439 MACKLIND AVE., ST. LOUIS 10, MO.

—Labor—

Wages:

Employers must give workers' names, pay to union.

Employers must comply with a union request for names of employees and their individual wage rates, National Labor Relations Board rules.

NLRB also rules that the union, when requesting such information, does not have to show any specific need, but only its relevancy.

The agency repeatedly has held that individual wage rates must be furnished, but in the past it has not required employers identify persons earning the wage rates.

Comply With Taft-Hartley

In ordering the Whitin Machine Works, Charlotte, N. C., to turn over payroll information to the CIO United Steelworkers, the NLRB majority declares: "Refusal by an employer to supply such necessary information makes impossible the full development of the collective bargaining negotiations which (the Taft-Hartley Act) is intended to achieve."

Majority decision is signed by Board Members Abe Murdock, Ivar H. Peterson and Philip Ray Rodgers. In a separate opinion, Chairman Guy Farmer concurs with the general rule set forth, but says in the Whitin case the firm's refusal was caused by a "misconception of its relevancy" and not bad faith.

Crack Down on Under-Par Wages

Washington's new get-tough policy with firms paying illegally low wages resulted in action against 20 companies in the first half of this year.

All of the violators named by the U. S. Labor Dept. held construction contracts financed in whole or part with federal funds. Under the Davis-Bacon law, workers on such jobs must be paid a minimum prevailing wage as determined by the U. S. Labor Dept.

Stop Truck at Atomic Energy Plant



Last week CIO pickets at Oak Ridge, Tenn., atomic energy plant halted a truck and told the driver to let his "conscience be his guide" about crossing the picket line. The atomic energy workers who quit work at Oak Ridge and also at Paducah, Ky., were seeking a 15¢ per hour wage hike. The workers have since voted to return to work.

Pensions:

House group pushes plan for self-employed workers.

Backers of a measure to provide tax incentives to self-employed workers who set up their own pension plans are laying the groundwork for quick action next January. Passage this session seems doubtful.

A bloc of about 15 Representatives, mostly from New York, are re-introducing a corrected version of the bill even at this late date in order to pave the way for speedier action at the next session. Their object is to get government agencies, such as Internal Revenue Service, working on reports so that a full record will be ready in January, eliminating delay.

The bill would permit a self-employed worker, such as a salesman, merchant, or professional man, to put aside a portion of his annual income, either in a restricted retirement annuity insurance policy or through his bank, and deduct it from his income tax.

Deductions of 2½ pct of earned adjusted gross income from an employer who contributes to a pension or profit-sharing plan, plus 5 pct of income from other sources; or $1000 for the first year, $2000 for the second year and $3000 thereafter, are provided.

A worker who is a member of an employer's pension plan, may deduct only 2½ pct of earned adjusted gross income or $500 the first year, $1000 the second year and $1500 thereafter.

A self-employed worker, therefore, may deduct either 5 pct of his income or take the $1000 deduction the first year and the larger deductions in later years.

May Steel Wages Hit '54 High

Iron and steel industry wages averaged $2.314 per hour in May, highest figure so far this year, American Iron and Steel Institute reports. The May figure compares with $2.296 in April and $2.222 in May 1953. If pension, social security and insurance costs were included, the May 1954 hourly wage cost would be, on the basis of the 1953 average, about $2.49.

Industry employment was estimated at 606,400 in May, against 609,400 in April.

Railroads:

Economies force cut in steel and equipment purchasing.

Inability of U. S. railroads to secure funds for maintenance and modernization needs this year has caused a production cutback of some 1½ million tons in finished steel products by the steel industry. This fact keynoted a recent speech made by Benjamin F. Fairless, chairman of the Board of U.S. Steel Corp. before a meeting of the Committee of Railroad Suppliers.

"Normally," Mr. Fairless pointed out, "about 7 pct of all the steel that is made in this country is sold—directly or indirectly—to the railroads. Last year, that amounted to 5½ million tons of finished steel products. But present indications are that the railroads, this year, will buy only a little more than 4 million tons . . ."

Reasons for the railroads' financial condition which prevents them from obtaining funds for necessary improvements were listed by Mr. Fairless as:

1) Unjust taxation, which in some cases, demands more in levies on railroad property in a given area than the roads total revenue from the use of the same facilities.

2) Unions which "have forced into their contracts a number of make-work rules and featherbedding practices.

3) Obstacle of "prehistoric" concepts of state and federal regulation.

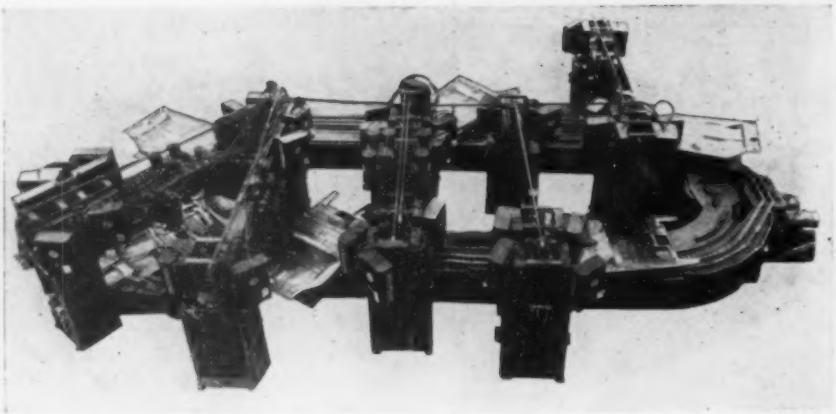
Green Light for Piggy-Back Cars

Back on the tracks this week are plans made by six large railroads to haul loaded truck trailers on flatcars at rates filed in late spring with ICC.

In mid-June, ICC ordered a suspension of the proposed piggy back service, but last weekend the agency reversed that order.

Carriers affected by the action are the Baltimore and Ohio, Pennsylvania, Erie, Lackawanna, Nickel Plate, and Wabash.

ICC intends to resume investigation of piggy back operations on July 17.



Early example of Federal Resistance Welding Automation is this Floor Pan Welder for a leading automobile builder. Placed into operation in 1938 it featured continuously moving fixtures and walking guns. Produced 250 units per hour.

Why All This Talk About Automation?

The automatic handling of work in process isn't a new idea. Leading manufacturers in almost every metal working field have been using "automated" machinery for years to increase the productivity of their work.

The talk about automation today, of course, is a result of the concentrated effort on the part of vast numbers of manufacturers, large and small, to stay competitive by trimming production costs whenever possible.

Federal, for almost a quarter century, has been working with such people in developing resistance welding machinery that would reduce costly, non-productive handling to a minimum.

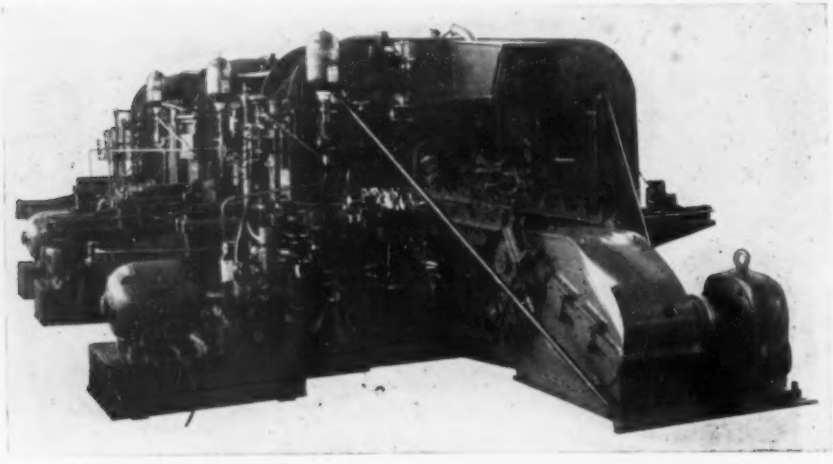
While automation may be new to many machine builders Federal design engineers have piled up 25 years experience in designing and building automatic handling and assembling equipment, dial, shuttle and transfer feeds for resistance welding. A big reason why you should take your welding problems to **"Federal — First in Resistance Welding."**

Federal® WELDERS

Warco® PRESSES

The Federal Machine and Welder Co., Warren, Ohio

Modern Example of Resistance Welding Automation is this Federal Special Three-Station Transfer Type Muffler Assembly and Welding Machine. It produces 600 complete assemblies per hour. Reduced labor forces required by several hundred per cent.



—**Manufacturing**—

Plastics:

Chevrolet solves auto body production riddles.

Plastic car bodies by the millions are a lot nearer than automakers and plastics experts thought possible a few years ago.

Major obstacles to mass production were 1) difficulty of adapting glass fibers and liquid bonding agents to accurate, high-speed die-stamped fabrication methods and 2) excessive time needed for the formed body to harden.

Pioneering method entailed building body by hand from sheets of glass cloth and liquid resin over a wooden mold much like papier mache making. Hardening time was over 24 hours.

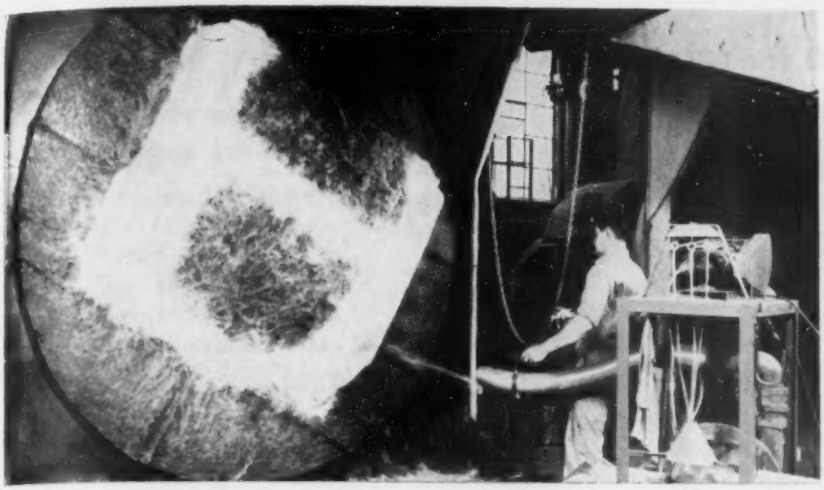
Bodies Made By Hand

However, engineers of GM's Chevrolet Div. bore down on the problem, licked the two big obstacles. Result of their efforts is the process shown on the opposite page which cut forming and hardening time down to a matter of minutes, enables Chevrolet to make bodies for Corvette sports cars at the rate of 1000 per month. (Production has recently been cut back to 300 per month. See p. 80.)

The Corvette is constructed of loose glass fibers instead of woven fiber glass sheets. These fibers are blown onto a wire-mesh form of the body panel constructed. Fibers are held in place on the mesh-form by suction while resinous bonding agent is sprayed on.

After a brief heating period, the roughly-shaped glass fiber preform, looking much like an overstarched blanket, is placed between steel dies to be formed into final shape. These dies are made hollow to permit passage of steam behind the stamping surface.

Dies compress the resin-glass fiber preform for 7 minutes under pressure of 120 psi and 220 degree temperature. This process completes the glass fiber part ready for trimming and installation in a mere fraction of the previous hardening time.



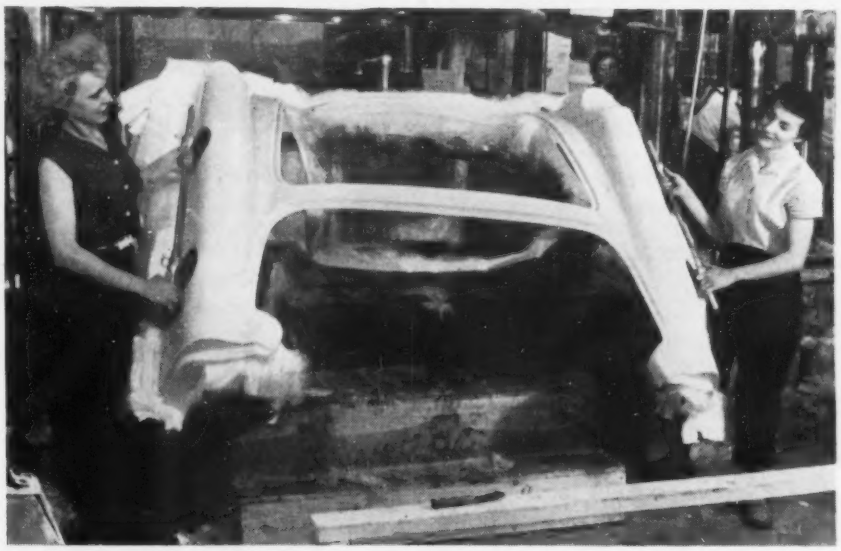
1. Body pre-form for Corvette is made by blowing glass fibers onto screen mold where they are held by suction, sprayed with resin.



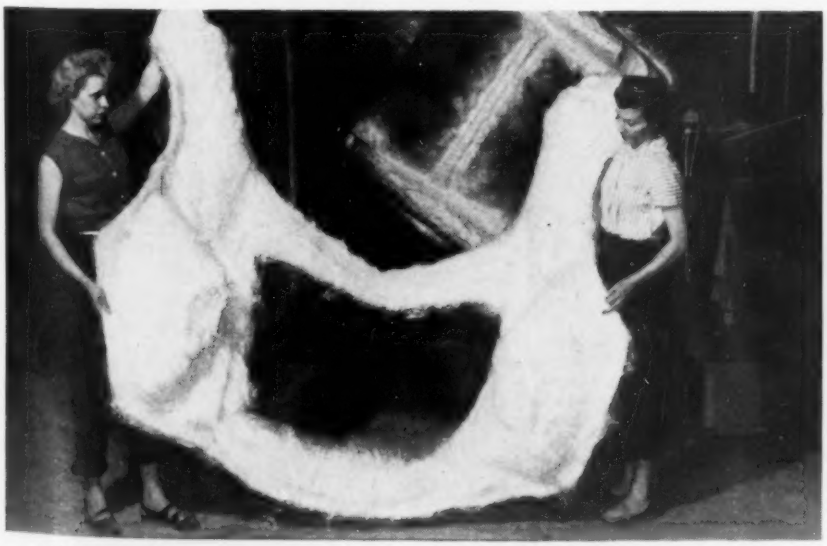
4. Pre-form is placed between heated dies, gets resin coat.



2. Resin-coated fiber mass is heated 3 minutes to stiffen.



5. Corvette hood and fender unit removed from dies after application of 220 degree heat, 120 psi pressure for 2 to 7 minutes.



3. When it leaves screen mold, the glass fiber pre-form is semi-rigid, roughly shaped and ready to be pressed into final shape.



6. Completed Corvette and some of the 62 plastic parts.

Test Rocket-Powered Midget 'Copters



FIRST U. S. rocket-powered helicopter, RH-1, in Navy flight test.

Two tiny helicopters unveiled by the Navy recently make use of innovations designed to improve the propulsion systems and control of rotary-wing aircraft of the future.

One of these single-passenger ships, the RH-1, is the first U. S. rocket-powered helicopter. It was developed for the Navy under the "Pinwheel" project by Gilbert Magill, president of Rotor-Craft Corp., Glendale, Calif.

Use Gyro Stabilizer

The propulsion system for the RH-1 utilizes very small rocket engines at the tips of the helicopter blades.

Exceptional stability is claimed for the Kellett KH-15, the second of the new aircraft. Kellett Aircraft Corp. built this helicopter, also powered by rocket engines, at its Camden, N. J., plant.

Gyro-stabilizing controls are incorporated in the KH-15 to make the plane more stable in flight and reduce vibration.

Navy Started Research

Both the RH-1 and KH-15 are the results of research projects that received their start in the Navy's Office of Naval Research.

Rocket engines for the two craft were built by Reaction Motors Inc., Rockaway, N. Y.

Contracts Reported Last Week

Including description, quantity dollar values, contractor and address. Italics indicate small business representatives.

Tube electron jan, 63000 ea, $359,100, Tung-Sol Electric Co., Newark, N. J.

Radio transmitter, 75 ea, $297,100, Barker and Williamson, Inc., Upper Darby, Penna.

Electron tube type, 50000 ea, $200,000, General Electric Co., Schenectady, N. Y., *W. H. Bobear.*

Receiver, transmitter RT68, 7173 ea, $498,682, Federal Telephone & Radio Corp., Clifton, N. J., *C. J. Alpaugh.*

Radio receiving set, 437 ea, $2,656,424, Motorola, Inc., Chicago, Ill.

Anodized-Gel Batteries 3000 ea, $192,375, The Magnavox Co., Ft. Wayne, Ind.

Power resistors film, 2700 ea, $112,498, International Resistance Co., Philadelphia, Pa.

Mercury type batteries, 2450 ea, $132,035, P. R. Mallory and Co., Inc., Tarrytown, N. J.

Battery, dry, BA-2, battery, dry, BA-70, battery dry, BA-233/U, 137,640 ea, $607,489, Ray-O-Vac Co., Madison, Wis.

Electron tube type, 67000 ea, $284,750, General Electric Co., Schenectady, N. Y., *W. H. Bobear.*

Fording kit MK-193, 220 ea, $324,050, Rett Products Co., Detroit, Mich.

Battery pack, BA-259, 150000 ea, $418,500, The Eagle Picher Co., Cincinnati, O.

Direction finder set, 113 ea, $286,492, Parkchester Mach. Corp., N. Y.

Electron tube type, 216355 ea, $200,561, Sylvania Electric Prod., Inc., New York.

Loans:

Permit on-spot regional SBA application approvals.

Regional directors of Small Business Administration have new authority from the agency to make certain loans in amounts up to $50,000 without prior approval of the Washington office.

A change in SBA policy permits the 14 directors to authorize bank-participation loans, provided that the bank share is at least 25 pct of the loan and not less than half the bank share represents new money.

This procedure, which for the first time makes it unnecessary for the SBA Administrator to approve all small business loans, is considered a means of providing financial aid for small firms with a minimum of delay.

The proprietor of an enterprise now may work out with his banker a participation loan and have the assurance that SBA will act speedily on the application.

SBA Administrator Barnes says two-thirds of the 462 loans granted by his agency have been made with bank participation. Use of the bank funds has meant less of a drain on the federal treasury.

Average SBA loan has been for less than $60,000. Only 59 have been for more than $100,000.

Okay Anti-Red Defense Buying

The Federal Government has approved procurement of $45.4 million worth of goods and services designed to bolster anti-Communist defenses around the world.

Countries slated to benefit by the new aid program are Austria, French North Africa, Spain, Turkey, China (Formosa), Indochina, the Phillippines, Thailand, Israel, Bolivia, and Korea.

Among the larger purchase authorizations in the new program is a total of $1,417,000 earmarked for purchase of machine tools by Spain, and $200,000 for purchase of iron and steel mill products by Austria.

REPORT TO MANAGEMENT..

Who'll pay for price rise?

Will the steel price increase be passed on to consumers? That's still the number one question being asked following the steel contract settlement (see p. 59).

General view is that steel users will be forced to absorb the higher cost of steel because of buyer resistance and current stiff competition.

Backing this belief were statements by numerous companies shortly after the settlement to the effect that they would not hike prices.

In many cases companies will undoubtedly be forced to absorb the steel price rise. But for some, the hold-the-line announcements were given strictly for publicity purposes.

Less product for same price

In certain industries, such as construction, announcements of company policy on how the steel price increase will be handled are meaningless. Since bids on construction jobs aren't broken down it would be impossible to tell whether the company or the customer was picking up the tab for the price hike.

In other industries some firms may pass on the steel cost increase by offering less product at the old price.

Best rule of thumb on who's going to pay for the higher cost of steel is this: if a company thinks it can raise prices and get away with it, then it will.

Employment is firming

Government came out with some really startling labor statistics last week. Unemployment between May and June rose only 42,000, far below the usual jump of around 300,000 customary for the period.

Reason for the less-than-usual increase in unemployment is an uptrend in employment and the fact that fewer students than usual entered the labor market early in June.

The real influx of students into the labor force may not show up statistically until next month which means another increase in the jobless total can be expected. But the less-than-seasonal increase in unemployment for June is a definitely encouraging sign that one of the long lingering trouble spots of the business decline is beginning to clear up.

On top of this, employment in June rose 979,000 to 62,098,000, not far from the '53 peak of 63.4 million.

Inventories in better shape

There was more good news in the government's report on business inventories. Manufacturers, wholesalers and retailers stocks at the end of May were valued at $79.6 billion, a drop of $714 million from the previous month. This marks the first time in 4 years that May inventories were lower than year-earlier levels.

Commerce Dept. cautions, however, that business firms still have higher inventories in relation to sales than they did a year ago.

Industrial Briefs

Research Center . . . Jones & Laughlin Steel Corp. started construction on a new research center to be completed in mid-1955 on Baldwin Hill, on the South Side, Pittsburgh.

Exchanging Info . . . Allegheny Ludlum Steel Corp. and Mannesmann-Nuettenwerke A. G., West Germany, are exchanging technical information on manufacture of grain oriented silicon steel strip.

Elected . . . Drop Forging Assn. elected K. E. Walter, head of Alliance Drop Forging Co., Alliance, Ohio, president at its 19th annual meeting recently.

Going Up . . . National Lead Co. began construction of new facilities for the production of titanium dioxide at St. Louis.

Plant Addition . . . Link-Belt Co. expanded its West Coast facilities with a three-story addition to its San Francisco plant at 400 Paul Ave.

Consolidated . . . Sheffield Steel Corp. consolidated with Armco Steel Corp. recently and will be operated as Sheffield Steel, Div. of Armco.

New Arm . . . Carborundum Co., Niagara Falls, N. Y., plans to establish a new subsidiary at Mayaguez, Puerto Rico, Arturo R. H. Hau, will be general manager.

Honored . . . At Ex-Cell-O Corp., Detroit, the American Society of Mechanical Engineers, made Carroll R. Alden, Research and Patent Engineer, a Fellow of the Society.

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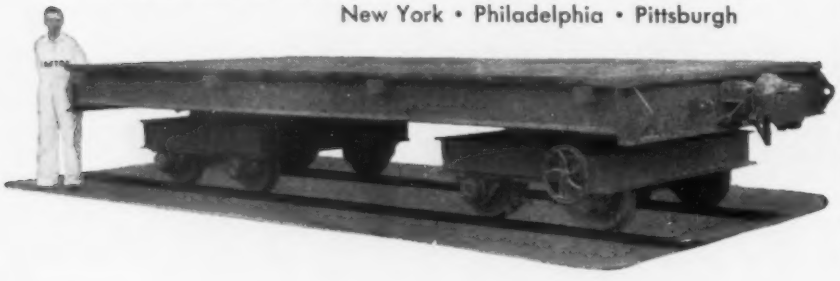


Platform Cars

Single and double-truck to any desired capacity

EASTON CAR & CONSTRUCTION COMPANY • EASTON, PA.

New York • Philadelphia • Pittsburgh



Closing . . . Warner & Swasey Co., announced that its manufacturing plants in Cleveland and New Philadelphia, Ohio, will be closed 3 weeks—from July 19 through August 8 inclusive—for employee vacations.

Appointed . . . Wagner Bros., Inc., Detroit, manufacturers of electroplating equipment and supplies, announced the recent appointment of the Reynolds-Robson Supply Co., 2213-21 W. Glenwood Ave., Philadelphia 32, Pa., as a distributor for Wagner products.

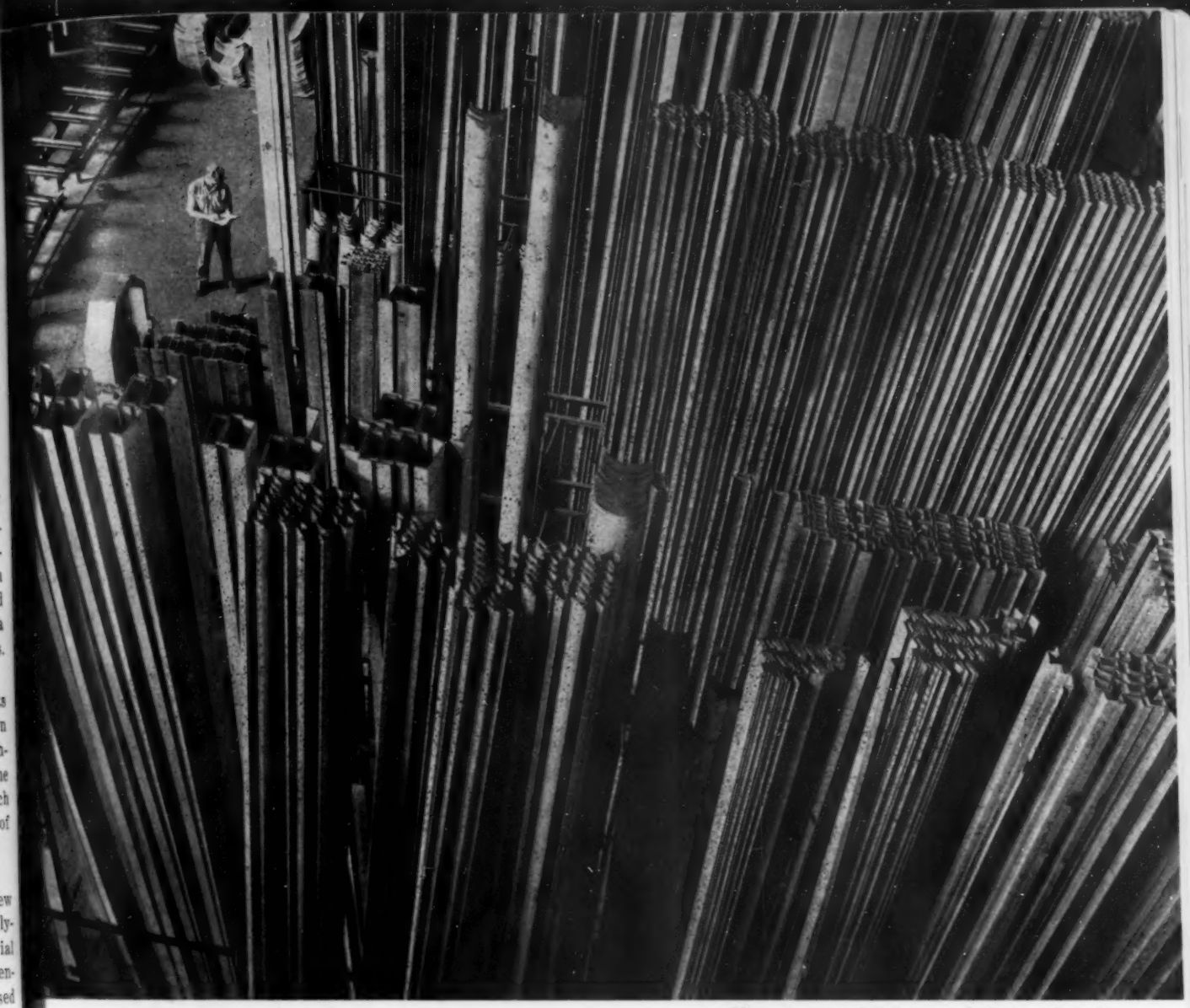
Created . . . Purchasing Agents Assn. of Chicago, in conjunction with the Illinois Institute of Technology, has created two full-time scholarships valued at $2320 each for the professional education of purchasing executives.

Leased . . . Mercast Corp., New York, announced that its wholly-owned subsidiary, Industrial Metal Casting Corp., 13721 Bennington Rd., Cleveland, has leased its plantwide facilities to the Alloy Precision Castings Co., East 45th and Hamilton Ave., Cleveland, a Mercast licensee.

New Site . . . St. Paul Hydraulic Hoist, Wayne, Mich., has moved its sales and service functions, covering both domestic and export activities, to its new expanded plant site in Mattoon, Ill.

Receives Contract . . . Swindell-Dressler Corp., Pittsburgh, has completed contractual arrangements with Tata Iron and Steel Co., Ltd., India, covering supervision and erection of extensive new steelmaking facilities.

Acquired . . . Arthur D. Little, Inc., San Francisco, has acquired the research and development division and laboratories of Merrill Co., metallurgy and engineering firm.



Magnesium extruded shapes ready for immediate shipment.

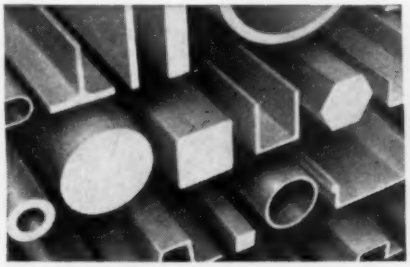
a new look at Magnesium!

NEW AVAILABILITY... SHAPES AND LENGTHS EVER BEFORE EXTRUDED

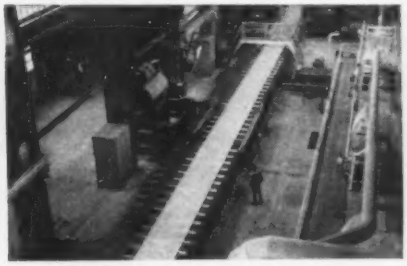
Designers and cost-conscious production men have found the answer to their problems in many applications with magnesium extrusions—now produced by new Dow facilities. Standard and special shapes, bars, rods and tubing—all are readily available in alloys which save weight, add strength, cut costs. Get information on magnesium from your nearest Dow sales office or write THE DOW CHEMICAL COMPANY, Midland, Michigan.



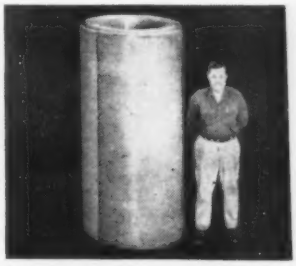
checking special extrusions offered in a wide variety of alloys and sizes.



Magnesium bars, rods, shapes and tubing. Available in diameters or cross sections up to 10 inches.



World's first 84-inch magnesium coil mill now rolls sheet and plate in greater lengths and widths.



This coil of magnesium sheet started through the 84-inch coil mill as a one-ton rolling ingot.

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DOW

Uneven Sales Race Marks First Half

GM, Ford account for 81 pct of U. S. total . . . Ford output 40 pct above '53 . . . Independents sag badly, see no profits . . . Corvette production slashed—By *R. D. Raddant*.

The out-of-balance state of the auto industry as it reached the midway point of 1954 forecast a gloomy second half for all but a few segments.

These few segments, General Motors and Ford divisions specifically, actually produced better than 81 pct of all the cars turned out from Jan. 1 to July 4. GM itself rolled up 51 pct, exceeding by a few percentage points President Harlow H. Curtice's most optimistic prediction.

The plain fact is that even these producers that are cornering such a lion's share of the market are going to have hard going in the next few months. Obviously, the others have little or no opportunity of improving their position in the closing months of the year.

Push Sales Efforts . . . Their dealers have been resorting to practices in May and June usually reserved to move inventories in the slow months of September and October. There is little they can do now to stimulate sales that they haven't been doing already.

It is generally accepted in Detroit that only GM, Ford and Chrysler will show a profit during the first half of the year. And Chrysler's will be well below what is was a year ago and what it should be for a completely healthy operation.

From totals tabulated by *Automotive News*, it appears that only the Ford Motor Co. built more cars in the first half of the year than it did in 1953, but this was a substantial jump of 40.6 pct.

GM's Half Down . . . General Motors dropped 10 pct in spite of the terrific showings of the restyled divisions of Cadillac, Buick and Oldsmobile, each enjoying one of its best years in history. It should be pointed out that Chevrolet is in first place, and probably will stay there in spite of Ford's heroic sales efforts.

Going down the line, Chrysler's first half production dropped 45.8 pct; American Motors slipped 68 pct; Kaiser dropped 68.3 pct; Packard dropped 67.9 pct; and Studebaker went down 56.1 pct.

The only factor that can save 1954 for many automakers is early introduction of 1955 models. But here again the aces are in the hands of the GM and Ford divisions. Chrysler's restyled cars cannot make it before late in the year and possibly not before January of 1955. Independents may crowd in earlier, but die programs indicate Ford and GM will lead off.

Slash Corvette Output . . . A mild shocker to the auto industry was the surprise curtailment of Corvette production by Chevrolet to 300 a month only a few weeks after the production goal of 1000 a month had been reached.

It had been confidently assumed that at even 1000 per month the demand for the slick roadster would exceed production and that the plastic sports would remain a prestige item.

But the fact is that Corvettes haven't been selling at production rates and an oversupply exists at the moment. This is in direct contrast to the demand that appeared a year ago. Then the car's intro-

Mad at Banker?

Auto salesmen may be overlooking one group of prospects with enough money for new cars. They're the bankers. In Washington, the story is that of some 30 bankers who recently called on a Cabinet member, just two had been visited by a car salesman this year.



"NOT VERY IMPRESSIVE" commented Henry Ford II when he inspected a Russian-made auto at a Soviet trades fair in Copenhagen, Denmark, recently. The Ford Motor Co. head said of the Red cars, "They are obviously about the same type of cars we made some 20 years ago."

duction was followed by thousands of letters offering to buy a Corvette regardless of price.

No Merchandising Followup . . . One of the reasons for the slack market may be that, in the tense competitive situation, Chevrolet has made no attempt to push Corvette sales, either in salesrooms or national advertising. Many prospective buyers may not even realize that one can be had.

On the other hand, the price of $3250 plus extras may have been a little high, although it is not out of line by sports car standards. In addition, the top problem was never satisfactorily solved and the Corvette could not be called an all-weather car. Or maybe there just isn't the sports car market that many thought existed.

This special market will get a new test when the Ford Thunderbird hits the market, which it is expected to do shortly. The Thunderbird will be of steel construction and might be priced below the Corvette. But the Thunderbird is also tooled for much higher production than 1000 a month and the Corvette situation must have caused some uneasiness in Dearborn.

Packard to Build Own Bodies

Packard will take over its own body operations July 12 when it moves into the former Conner St. plant in Detroit. Its bodies were built there first by Briggs and then by Chrysler after this company took over Briggs Body late last year.

The move, under which Packard will lease the facilities, has wider significance than the obvious fact that Packard will be making its own bodies, although that itself is a vital point in the Packard program.

It also means that Packard will take new stature as a steel purchaser, since, under the former arrangements, purchases for bodies were made by Briggs and Chrysler. This will put all steel purchases under Packard, which in the past has suffered in times of shortage from inadequate mill position.

"We can now control all purchases for our own bodies," A. H. Behnke, vice president-materials, told THE IRON AGE. "We are going to set policies and establish a pattern so we will never get caught as we have in the past."

Automotive Production

(U. S. and Canada Combined)

WEEK ENDING	CARS	TRUCKS
July 10, 1954...	91,277*	15,985*
June 3, 1954...	113,103	20,038
July 11, 1953...	142,112	25,488
June 4, 1953...	123,048	15,676

*Estimated. Source: *Ward's Reports*

Research:

Diecast engines have few advantages over iron.

Much of this column a week ago (THE IRON AGE, July 8, 1954, p. 68), was devoted to the possibility of diecasting an aluminum engine, based on the development by Doehler-Jarvis of a diecasting machine with that potential.

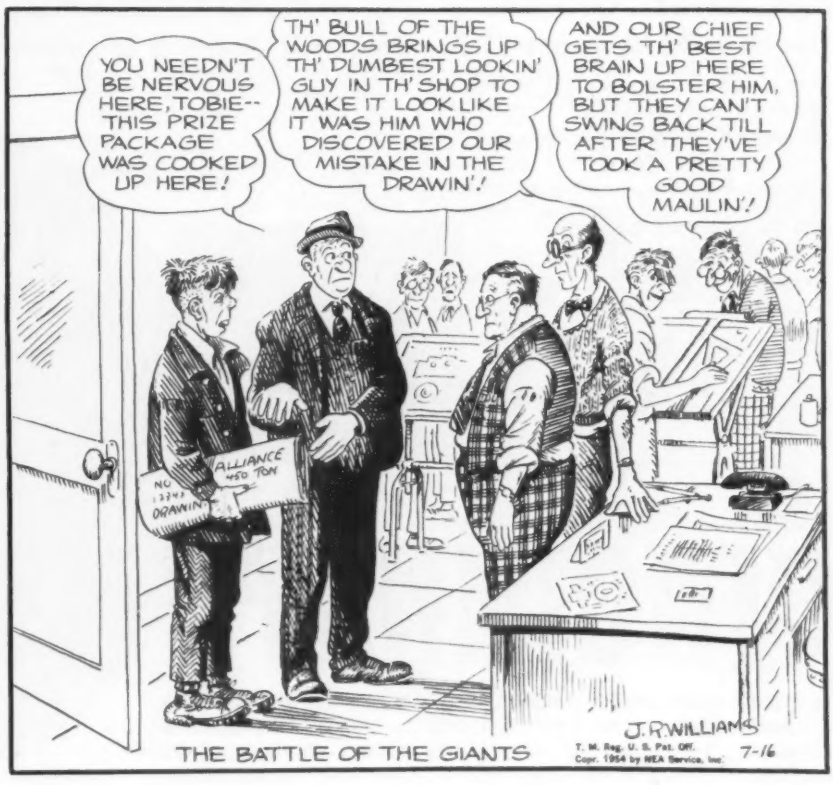
Some further research into the advantages of aluminum over cast iron indicates that they may be confined to lighter weight and ease of machining. This does not take into account the comparative cost which will be determined by the success of diecasting the block.

Extensive studies of one of the Big Three, confided to this column, indicate that there is little advantage of aluminum over gray iron from the standpoint of engine operation. And there may be some disadvantages.

Pose Same Problems

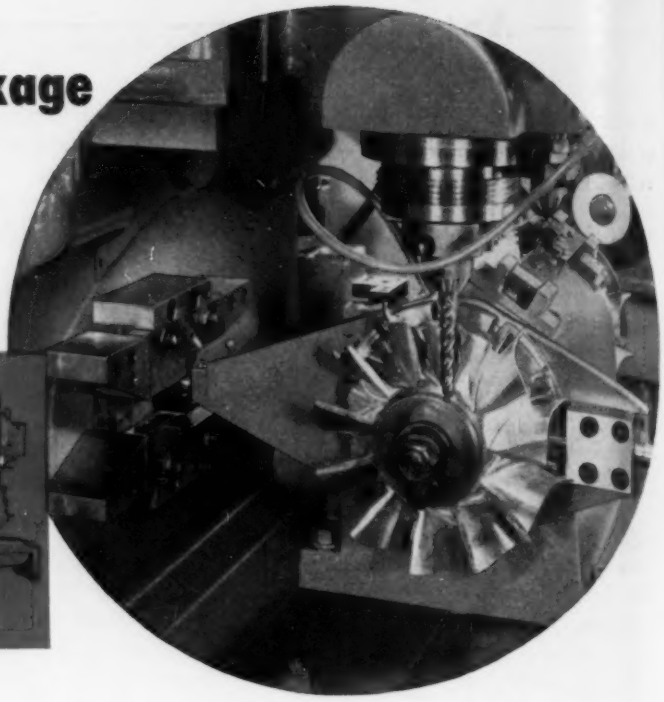
Advantages from aluminum that might have been expected were an octane advantage, less deposit problem, and cooler deposits. So far tests on aluminum engines indicate that the deposit problem is not significantly less, deposits heat up on aluminum to the same extent as on gray iron, and no apparent octane factor appears to be built into aluminum. Furthermore, some corrosion problems have occurred.

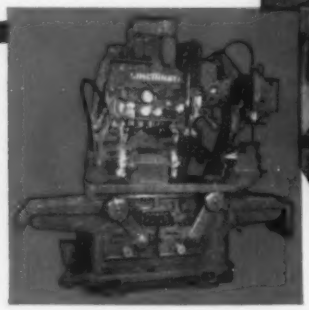
THE BULL OF THE WOODS — By J. R. Williams



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Complete Production Package

CINCINNATI 16" Vertical Hydro-Tel

tooled up by Cincinnati

Part name..... Impeller
Material ..... Aluminum
Operation ..... Automatically mill profile around blades

Complete information on standard 16" Vertical Hydro-Tel may be obtained by writing for catalog No. M-1497-1.

Complete Production Package

CINCINNATI FILMATIC No. 3 Centerless Grinder

tooled up by Cincinnati

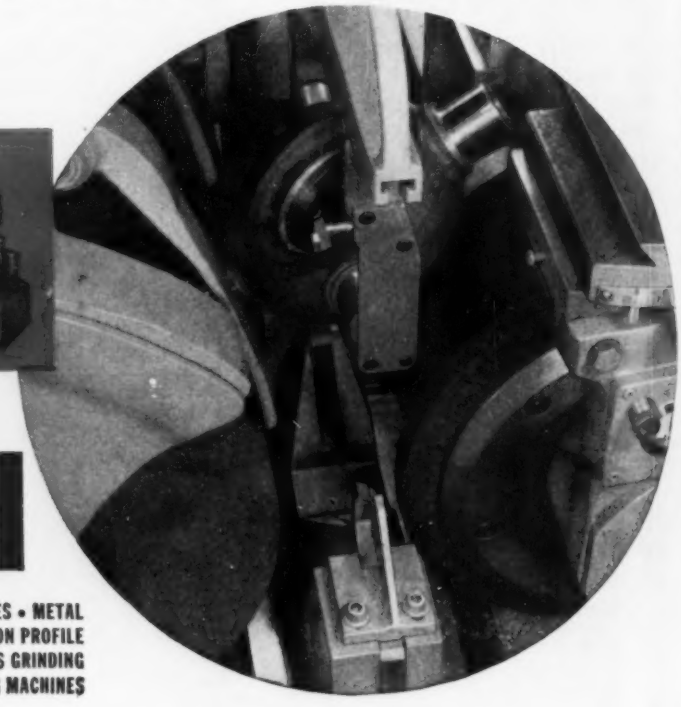
Part name..... Universal joint spider
Material ..... Steel
Operation ..... Grind two diameters simultaneously

Complete information on standard No. 3 Centerless may be obtained by writing for catalog No. G-570-3.



Do you have an idea for new low-cost methods in your plant? Or perhaps you have machining, forming or heat treating problems and do not know how to solve them. In either case, Cincinnati Engineering Service can give you the help you need. Our Application Engineers will develop your methods and production ideas, or develop methods from their own experience, with the objective of supplying you with the complete production package for the lowest cost of operation. Two examples of Cincinnati Engineering Service are illustrated here. Both are tooling applications on standard machines selected from our extensive line of products: Milling, Die Sinking, Broaching, Grinding, Lapping, Cutter Sharpening, Forming and Flame Hardening Machines. Our engineers will be glad to give you the benefit of their wide experience in reducing metalworking costs. Include full particulars when inquiring.

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Defense Thinking Enters New Phase

See pickup in tempo of defense program . . . Administration sees no easing in Red aggression . . . Won't go along with Britain's get soft view—By G. H. Baker.

Administration is moving toward a new phase in its defense thinking: There will be less saber-rattling ("bomb-rattling," Charlie Wilson calls it), and a quiet, grim pick-up in the tempo of the defense program.

Pressure from Britain to "understand the Communists' problems" is rejected flatly everywhere in Washington.

Today, Britain says in effect: "The Communists are not such bad fellows. We don't think they mean to dominate the world. Let us trade with them."

Far from noting any easing in the pattern of Red aggression around the world, the Administration believes the time is at hand for some serious beefing-up of defense, both at home and abroad.

Ike Gets Backing . . . Leaders from both the Democrat and Republican sides of the aisles at the Capitol have declared themselves in firm agreement with President Eisenhower's stand against accepting Red China into the United Nations.

Why, they ask, is the U. S. being urged to vote approval of the Kremlin's brand of bloody treachery? The U. S. sustained 160,000 casualties in the struggle to free South Korea from Red domination. Are we now to switch our position, to admit that this was all a mistake? Washington's answer, despite pressure from London, is a flat and unequivocal no.

U. S. reply to the current British view is to keep our guard up. This means maintaining defense procurement at current rates rather than cutting back on any defense orders. It also means no decrease in the draft.

A fighting war certainly is not being courted by the White House. This point must be clearly understood. But the Administration is making it increasingly clear that any new Red-backed strikes against the Free World are to be met face to face with U. S. armed might.

Population Mounting . . . Promise of continued strength of the U. S. economy is provided by our expanding population which means an ever increasing market for goods and services. Total U. S. population is now over 162,300,000—an increase of more than 11 million since 1951 when the most recent decennial census was taken.

The current rate of population growth is equal in size to a new Richmond, Va., every month; to a new State of Maryland every year, and to a new State of California every 4 years.

In April of this year, an estimated 305,000 births were registered, the largest figure on record for that month. If this keeps up, total number of births this year will exceed the record number (3,909,000) of last year. There are plenty of new markets in the making.



COMMERCE SECRETARY Weeks swears in Ralph E. Cross, executive vice-president, The Cross Co., Detroit, as assistant administrator of Business & Defense Services Administration.

Vacation Trade . . . In the area of retail spending, there is an exceptionally sturdy market this year in catering to the vacation and leisure-time trade. Liberalized vacation policies and time-off policies are largely responsible for the growth of this market.

Indication of the increase in leisure time in the U. S. is seen in the new government data on the use of federal parks and forests. These figures show that camping, picnicking, and other outdoors sports continue to rise. Recreational use of government forests increased by 7 pct last year, and has more than doubled since 1941.

Summer travel this year will be at least 10 pct higher than it was in 1953 with about 60 million persons taking vacation trips. Another sign of the booming leisure-time market: There are now about 50,000 motor courts in the U. S., and new ones are springing up at the rate of 2000 each year.

Retail Sales Strong . . . Retail sales, always a good barometer of public confidence, are rolling ahead toward encouraging new levels. Fact that sales generally did not show their customary seasonal decline in June is interpreted in government planning circles as further evidence that the 1953-1954 dip is behind us.

Seasonally-adjusted department store sales are holding up at surprisingly high levels. The customary post-Memorial Day selling slump has thus far failed to materialize.

Production of durable goods, nondurables, and minerals are also on the upbeat. The faster pace is especially apparent in output of TV receivers, processed foods, paperboard, and iron ore. Steel and automobiles also are up from the spring levels though to a lesser extent.

Turn Page



The shape of rings to come

It is difficult to predict the shape tomorrow's air power will take. But one thing is certain — fabrication of many of the component parts, such as rings, bands, and the complicated assemblies will be accomplished by welding.

If a new alloy — a special metal — an intricate assembly pose a problem to design or manufacture perhaps our specialized knowledge gained in 35 years of welding fabrication can help to find a practical and economical solution. Our Product Development Division will be glad to put experience gained from working with every major U. S. jet engine manufacturer to work for you. In addition to fusion and resistance welding of ferrous and non-ferrous metals, American Welding can provide designing, engineering, metallurgical and machining facilities.

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Want U. S. Bids Only . . . More than two dozen "distressed" Pennsylvania metalworking plants and their several thousand employees would benefit if the Federal Government awards a $20 million contract for railway equipment destined for India to that U. S. area.

Two manufacturers, Vulcan Iron Works, Wilkes-Barre, and Baldwin-Lima-Hamilton Corp., Philadelphia, are protesting a decision of the Foreign Operations Administration to call for worldwide bids on the project.

The contract calls for 100 steam locomotives and 5000 freight cars delivered to the nearest export port in whatever country the bids are awarded.

The two firms have asked the Administration to amend the bids to apply only to American manufacturers. The locomotive bids will be opened Aug. 6 in Washington.

A split of the locomotive contract, with 70 pct going to Baldwin and 30 pct to Vulcan, would help alleviate the distress situation.

May Ban Auto Bootlegging

Car and truck manufacturers may get congressional permission to penalize dealers who "bootleg" vehicles to unauthorized persons for resale.

Penalties could include withholding of deliveries or cancellation of franchises held by dealers who take part in these transactions.

Rep. Shepard J. Crumpacker, R. Ind., is calling for swift enactment of his new bill (H. R. 9769) to allow auto builders to enter into anti-bootlegging agreements with their dealers. This is a companion measure to a bill (S. 3596) offered into the Senate in June.

Will Help France on Copper

Foreign Operations Administration has agreed to loan the French government up to $1.4 million for development of copper deposits in French West Africa to reduce France's dependence on foreign copper sources.

U. S. will help finance public works programs, including harbor facilities on the Mauritania Coast.

How Ike Fared On Fiscal '55 Budget . . .

For	He Wanted:	And Was Granted:
Treasury	$ 578,783,000	$ 577,855,600
Post Office	2,760,000,000	2,754,877,100
State	116,191,960	114,110,000
Justice	177,732,000	176,864,500
Commerce	930,997,000	837,022,000
U. S. Information Service	89,000,000	77,114,000
Army Civil Functions	465,160,000	457,071,300
Independent Offices	5,929,723,600	5,651,770,063
Interior	422,118,430	405,936,149
Agriculture	698,741,813	723,683,150
Defense	29,887,055,000	28,800,125,486
Legislative-Judiciary	87,063,993	98,197,494
Labor and related agencies	312,776,000	311,784,500
Welfare	1,652,509,261	1,663,413,761
District of Columbia	21,890,000	21,890,000
TOTAL	$44,129,742,057	$42,671,715,103

Despite his slim majority in Congress, President Eisenhower fared very well on his fiscal '55 budget which was pared only $1.4 billion from his original request for $44.1 billion.

Biggest cut from requested appropriations was on defense. The President wanted $29,887,055,000 but the lawmakers sliced this down $1,086,000,000 to $28,800,125,486. Much of this loss will be made up by supplemental appropriations to meet increased steel prices and the needs of a re-valuated "new look" defense program.

Government budget officials estimate the $7.5 billion in tax cuts granted earlier, plus the business decline, will mean a budget deficit for the coming year of more than $3 billion.

Reds:

Anti-subversive program moving ahead slowly.

Action on Attorney General Brownell's 10-point anti-subversive program is moving ahead—slowly.

Congressional leaders expect trouble on several of the bills, especially those dealing with unions. Union leaders are ready to oppose them on the grounds that they give the government, and in some cases industry, too much power over the unions.

Unions Must Register

In the latest Washington developments:

(1) Senate Judiciary Committee approved a measure to add "Communist-infiltrated" organizations, especially labor unions, to the provisions of the Subversive Activities Control Act and deny them bargaining rights under National Labor Relations Act. The bill would require a union, if determined by Brownell to be infiltrated, to register, file financial statements and identify its members, as Communist-action and Communist-front groups must now do.

(2) House passed and sent to the Senate a bill to stiffen penalties against persons convicted of harboring fugitives from justice. A bill passed earlier makes it a federal offense to skip bail. Both these measures are aimed primarily at subversives.

Bar Spy Suspects

(3) House Judiciary Committee approved a bill permitting the President to bar suspected spies and saboteurs from jobs in defense-related industries such as power plants or mines. Another bill ready for House action will expand and toughen the anti-espionage and antisabotage laws. One provision would permit the death penalty for peacetime espionage—a penalty now limited to wartime.

. . . IF IT'S A HIGH PRODUCTION PROBLEM . . .

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ENGINE PISTONS *travel fast* THRU *automatic* ASSEMBLY *of* BAIRD 6-SPINDLE CHUCKERS

With push-button operation in many large metal working plants, the Baird Chucker has graduated from a valuable single unit to an invaluable assembly for completely automatic production lines.

Higher, constant speed is one reason . . . minimum manpower . . . and maintenance of close tolerances during continuous removal of metal is, perhaps, the outstanding feature. The photo above shows an assembly of three Baird Chuckers automatically machining engine pistons in a leading automobile plant.

In this instance, operations include finish turning of the engine piston and finishing the oil ring grooves to size.

This Model 76H Chucker (7″ chucks, 6-spindle horizontal machine) combines, in a single indexing cycle, such operations as turning, facing, drilling, tapping, threading, grooving and chamfering, if required.

Electrical and mechanical safety devices prevent damage when any motions are out of time or sequence. All tooling is easily accessible . . . spindle speeds are individual and variable. Design and construction assure long service life. If you require repetitive production of this nature . . . hand load or unload or entirely automatic . . . ask Baird about it.

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Open Major U.S. Nickel Smelter

Project scheduled to process 95 million tons of ore . . . Mined at rate of 226 tons per hour . . . Turbine builders seek new metals . . . Kaiser ups prices—*By T. M. Rohan.*

Preliminary operating of the $4.3 million Riddle, Ore., nickel smelter started last week and will get into regular production "within a very few weeks." The project of 2 M. A. Hanna Co., Cleveland, subsidiaries is scheduled to produce upwards of 95 million tons of metal from a mountain deposit, only major one in the U. S.

The smelter design worked out by Bechtel Engineering of San Francisco reportedly has been somewhat simplified compared to the French version in order to overcome slag difficulties. Ore will be mined at 226 tons per hour by open pit method with bulldozers and carryalls. Two-ton buckets will carry ore 8037 ft on an aerial tramway dropping 2100 ft from mine to mill. A stockpile of 174,000 tons will be built up in 10 months' operation annually so the smelter can run during the winter.

Four melting furnaces, 26 ft in diameter, are rated 14,000 kva and a ferro-silicon furnace 9000 kva. Electrodes of 40 in. diameter compared to about 18-30 in. "normal" will generate temperatures of 3000°F. Power of 65,000 kw will come from Bonneville Power Adm. and California-Oregon Power Co.

Hit Metallurgical Barrier . . . Custom built machinery manufacturers are hitting a metallurgical dead end and going into their own research to get around the problem. A. C. Monteith, Westinghouse Electric vice-president in charge of engineering and research, said in San Francisco last week that his firm is fast learning that metals are the limiting factor on development of higher efficiency machinery. This is particularly true of steam and gas turbines and aircraft equipment, he said.

Since items of this nature are not mass-produced like cars and appliances, tonnage consumed is relatively small and development of new metal types is economically unattractive to producers.

Seek New Metals . . . "This is the major thinking behind Westinghouse's new $6.5 million metallurgical laboratory recently announced," he said. "In turbines, for example, greatest emphasis is on efficiency which means higher speeds and higher temperatures. Without some key developments in metals, refinements are hampered." One major field for this, he said, "is in development of engines for commercial jets where efficiency must be improved."

Mr. Monteith, who is also newly elected president of the American Institute of Electrical Engineers, added that Westinghouse has no intention of going into the alloy business. Any new types developed would be primarily for the firm's own products and would be made available to industry through license. He added developments "very definitely" include titanium.



"Here's what I've got so far: 'Virgin field for machine equipment. Wire more expense money . . . ' "

Kaiser Ups Prices . . . Kaiser Steel last week announced settlement with the United Steelworkers' local at Fontana for a 5¢ per hr increase retroactive to July 1, although its contract was to run to August 31. It also announced price rises comparable to those made by other steel producers last week. During the next few weeks other items involving additional costs for insurance, pensions and the like for workers will be negotiated between the company and union, it was said.

The firm also announced full operation of its ore beneficiation plant at Eagle Mountain, 120 mi from the Fontana mill. The 2-million-ton-a-year plant raises iron ore content from average 51 pct to 56 pct. After mining, the iron is magnetically separated, then sent through a heavy media solution of water and ferro-silicon and further separated through a sink-float process.

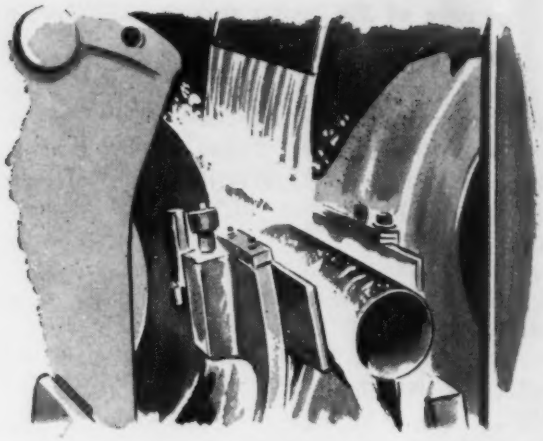
Option More Land . . . U. S. Steel's Pittsburg, Calif., Works last week optioned another 93 acres of adjacent tidewater land giving further rise to expansion talk. Several weeks ago 450 acres were leased for 6 months with option to buy (THE IRON AGE, June 10, '54, p. 77).

Newest move which was labelled "a protective measure" by a steel company official includes a 93-acre site west of the mill and an 800-ft dock owned by the Redwood Manufacturers Co., lumber-working firm. Under terms of the agreement the option continues until Jan. 31, 1955, and if taken up the lumber firm would have 2 years to vacate.

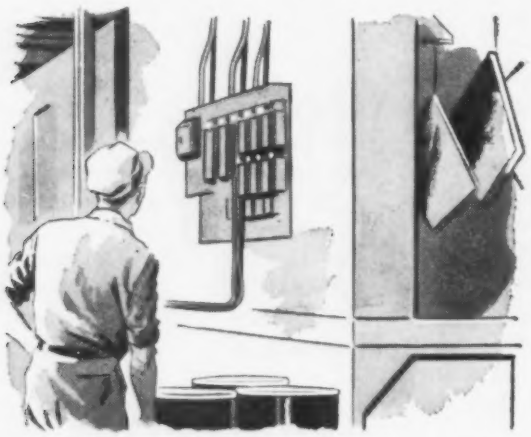
New S.E.C.O. is Tops For These Operations



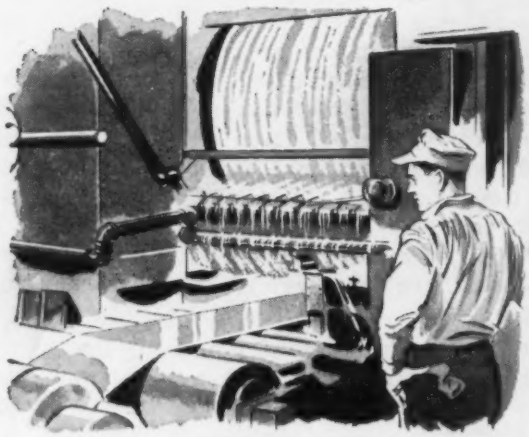
CUTTING WITH NEW S.E.C.O. Tools stay cool—require less frequent grinding. Finishes are uniformly good.



GRINDING WITH NEW S.E.C.O. Surface finishes are good. Loading and glazing of wheel are reduced—wheel life is prolonged.



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ROLLING WITH NEW S.E.C.O. Rolls stay clean. You get maximum reductions and low power consumption.

New Sunoco Emulsifying Cutting Oil increases production, cuts operating costs. Its high machining efficiency permits uniformly good finishes, prolongs tool life. Its high detergency and purity keep tools, parts and machines clean. Its excellent mixing qualities permit its use in cold, hard or hot water. Test New S.E.C.O. in your own plant. For more information, call your nearest Sun office or write SUN OIL COMPANY, Philadelphia 3, Pa., Dept. IA-7.

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Rely on Tax Change to End Downtrend

Machine tool builders hope liberalized depreciation allowances will stimulate machinery sales . . . Salesmen will stress tax savings . . . How new plan works—*By E. J. Egan, Jr.*

With new business volume sharply below early 1954 predictions, machine tool builders need a couple of real "clinchers" for their sales pitches to reluctant prospects. Builders are pinning a lot of hope on the possibility that liberalized depreciation allowances will serve as a stimulant to new equipment buyers.

Little doubt remains that rules to permit faster writeoffs on new capital equipment will be written into the administration's omnibus tax revision bill. Slightly different versions of just how much leeway should be allowed have already been passed by both the House and Senate. At press time, final compromise terms were still being hammered out in a joint conference committee.

Make No Promises . . . Builders are wary about making any promises to prospective customers, however. They have fought for years to get faster writeoff provisions and have had the rug pulled out from under them too many times just when it seemed that hoped-for legislation was well on the way.

But the Washington atmosphere appears definitely favorable this time. Lawmakers apparently now feel that liberalized depreciation allowances could help put manufacturing activity back in high gear.

Work Out Differences . . . Minor differences on the method and extent of these allowances should be ironed out by the conference committee without affecting the substance of the fast writeoff section. Both House and Senate agree that the ruling would apply to new equipment installed after December 31, 1953.

A Senate amendment to the original House version restricts liberalized depreciation to assets with a minimum useful life of 3 years. This provision may or may not stand up in the final compromise bill, but in any event it would not affect machine tools. Internal Revenue Service estimates of machine tool useful life generally start at about 15 years, go up to 25 in some cases and average out around 20 years.

Machine tool salesmen are getting ready to spell out the tax law phraseology in dollar and cents comparisons of the present straightline depreciation method vs. the proposed declining balance or sum-of-the-digits systems. Net benefit to a buyer choosing either of the suggested optional methods would be about the same.

Allow Twice As Much . . . In either case, a manufacturer could recover about two-thirds of his new equipment cost during the first half of its estimated useful life. And in the first full year of the useful life period, twice as much depreciation would be allowed as permitted under present regulations.

On the straight-line system which has applied since 1934, only a certain fixed percentage of initial cost could be depreciated each year throughout the estimated service life of a machine tool. At the half-life mark, users of any machine tool bought new cannot have written off more than 50 pct of its original price.

How It Works . . . Differences in the allowances under the current and proposed methods show up sharply in comparing writeoffs at the end of the first year of equipment use, and again at the half-life point.

For example, consider a pending $100,000 machine tool installation. Estimated useful life of the equipment is 20 years. Present ruling says that the buyer can depreciate 5 pct or $5,000 of the cost each year of the 20 years.

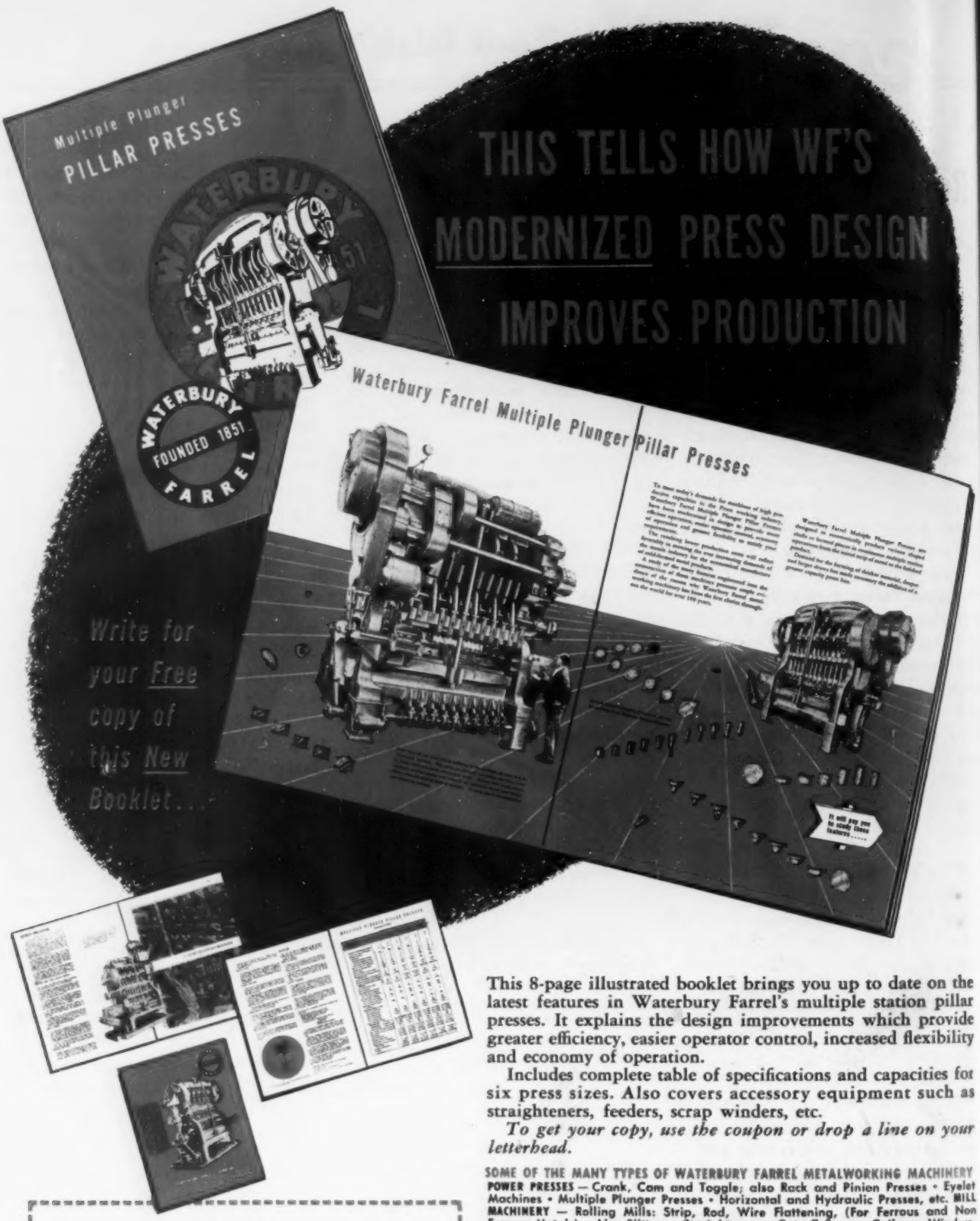
The new legislation now would grant the buyer a 10 pct or $10,000 allowance the first year. In the second year, the 10 pct rate would apply to the unrecovered balance of $90,000. And in each succeeding year the declining, unrecovered balance would determine the amount to be depreciated at the fixed 10 pct rate.

After 10 Years . . . At the 10-year, half-life point, the user would have written off about $65,130 of original cost. Best he can do at this point under existing law is $50,000 of the initial price.

Builders won't predict to what extent passage of the new bill would boom their business. But they're hopeful it will reverse the present sales downtrend, grow with something like a snowball effect as they learn the best way to weave the liberalized depreciation "clincher" into sales talks.



"Careful! Don't strip the threads!"



This 8-page illustrated booklet brings you up to date on the latest features in Waterbury Farrel's multiple station pillar presses. It explains the design improvements which provide greater efficiency, easier operator control, increased flexibility and economy of operation.

Includes complete table of specifications and capacities for six press sizes. Also covers accessory equipment such as straighteners, feeders, scrap winders, etc.

To get your copy, use the coupon or drop a line on your letterhead.

SOME OF THE MANY TYPES OF WATERBURY FARREL METALWORKING MACHINERY

POWER PRESSES — Crank, Cam and Toggle; also Rack and Pinion Presses • Eyelet Machines • Multiple Plunger Presses • Horizontal and Hydraulic Presses, etc. **MILL MACHINERY** — Rolling Mills: Strip, Rod, Wire Flattening, (For Ferrous and Non Ferrous Metals) • Also Slitters • Straighteners • Cut-off Saws • Coilers • Winders, etc. **WIRE MILL EQUIPMENT** — Continuous Wire Drawing Machines (Upright Cone and Tandem) • Wire Flattening Mills • Chain Draw Benches • Pointers • Swagers Bull Blocks • String-up Machines • Spoolers, etc. **COLD PROCESS BOLT & NUT MACHINERY** Headers (all types) • Rivet Machinery • Trimmers • Thread Rolling Machines • Slotters • Nut Formers and Tappers, etc.

WATERBURY FARREL
FOUNDRY & MACHINE CO.
Waterbury, Connecticut

Branch Offices: Chicago, Cleveland and Millburn, N. J.

WF-20

WATERBURY FARREL FOUNDRY & MACHINE CO.
Waterbury, Conn.

Gentlemen: Please send me my free copy of your Multiple Plunger Pillar Press Booklet.

*Name*_____

*Company*_____

*Address*_____

*City*_____ *State*_____

The Iron Age

SALUTES

William C. Denison

Farsighted planning and interest in youth led him to help educate his industry's future leaders.



NOT only is Bill Denison, president of Denison Engineering Co. of Cleveland, concerned with the welfare of youth, he's interested in the long-range growth and strengthening of hydraulic engineering in particular and American industry in general.

That's what prompted Bill to establish the William C. Denison Foundation which offers two 4-year college scholarships to talented high school students in the Cleveland area who show superior potential for careers in engineering.

Bill got his start as a salesman with Willard Storage Battery Co., later became Willard's district manager in Cleveland. Some time after that he was appointed General Manager of the Cook Motor Co., in Wilmington, Del.

His interest in the potentials of oil-hydraulic power transmission, and particularly its industrial applications, led him to form his own firm, Denison Engineering, in 1931. The firm specializes in design and manufacture of hydraulic equipment for both ceramic and metalworking fields.

Ability to select a winning team of able and enthusiastic subordinates has proved one of Bill's most valuable assets in building Denison Engineering to its present stature.

Bill's spare time is usually spent at his short-wave set, where he's busy contacting fellow radio hams in all parts of the globe.

riding comfort starts with

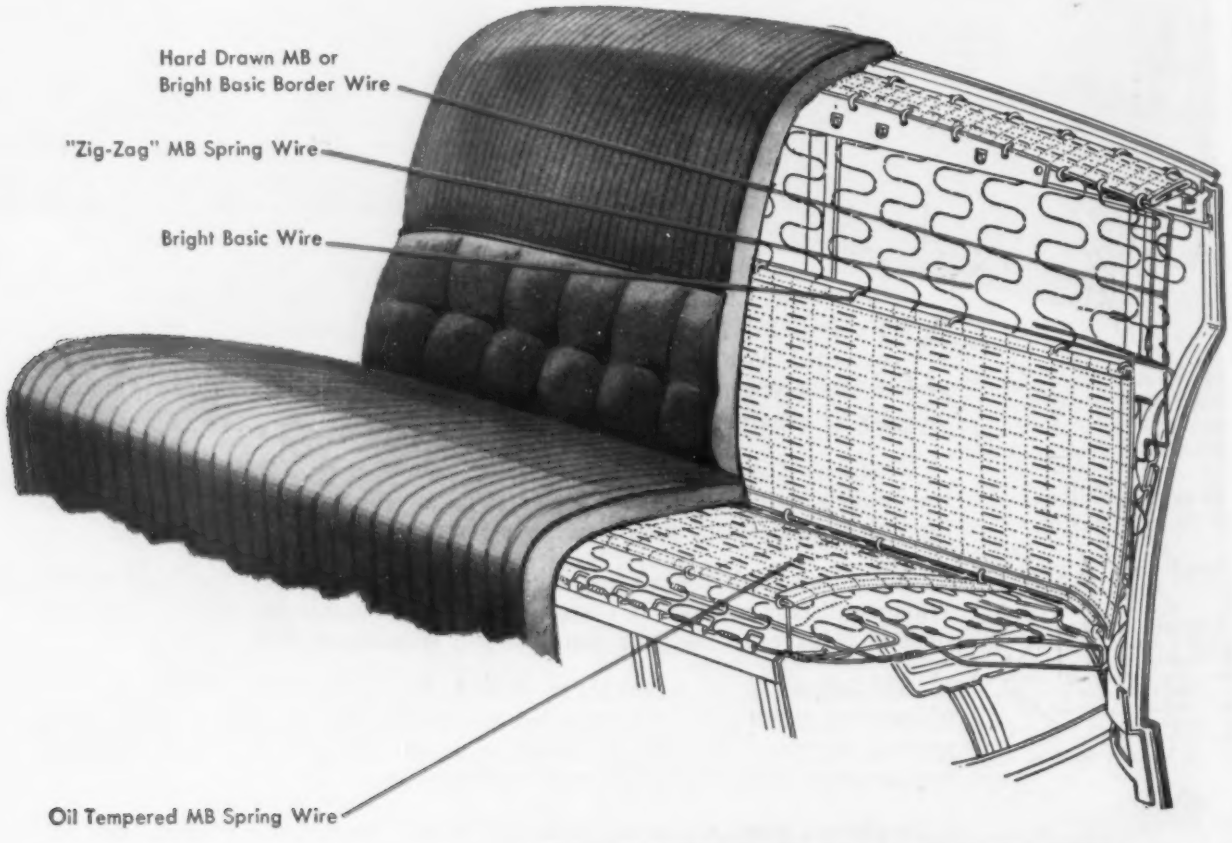
Wickwire Wire



New types of spring construction for seat and back cushions add immeasurably to the smooth, easy-riding comfort of today's automobiles.

Here again, as in so many other instances, the complete range of Wickwire Wire—high or low carbon, in all tempers, finishes and grades—provides exactly the right kind of wire for all parts of the complete spring assembly.

Good reason why Wickwire Wire is selected for the cushion spring units on many of America's leading makes of cars. Good reason, too, why it will pay you to remember—For The Wire You Require; Check First With Wickwire.



THE COLORADO FUEL AND IRON CORPORATION—Denver & Oakland
WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo
Chicago • Detroit • New Orleans • New York • Philadelphia

WICKWIRE WIRE
CF&I PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

2014

The Iron Age

INTRODUCES

James R. Bradburn, elected president, **ElectroData Corp.,** affiliate of Consolidated Engineering Corp., Pasadena, Calif.

Arthur Z. Barnes, elected assistant to the president, **General Cable Corp.,** New York.

I. Nevin Palley, becomes vice-president - Engineering, **Temco Aircraft Corp.,** Dallas.

George E. Klingelhofer, elected vice - president and secretary, **Pittsburgh Bridge & Iron Works.**

Kenneth Slawson, made vice-president, **Ford Instrument Co.,** Div. of The Sperry Corp.

Frank L. McCann, elected vice-president in charge of sales, **Edgecomb Steel of New England, Inc.,** Milford, Conn.

E. H. Stau, becomes vice-president and director of sales, **Olympic Screw & Rivet Corp.,** Downey, Calif.

Albert P. Schweizer, named vice-president in charge of automotive engineering, **Motor Wheel Corp., Lansing.**

F. B. Reybold, appointed assistant to vice-president-marketing, **American Locomotive Co.,** Schenectady.

William C. McDuffie, elected chairman of the board, **Northrop Aircraft, Inc.,** Hawthorne, Calif.

Paul M. Ruef, appointed to Plymouth executive sales staff, **Plymouth Motor Corp.**

Edward D. Depew, elected secretary and appointed general attorney, **Universal Atlas Cement Co.,** subsidiary of U. S. Steel Corp.

Robert A. Monague, appointed field engineer, Tulsa office **The Denison Engineering Co.**

Ralph T. Shipley, promoted to assistant superintendent of the steel plant, **The Timken Roller Bearing Co.,** Steel & Tube Div.; and **Burke Denison,** named general foreman, Gambrinus Steel Plant No. 2.

George J. Fischer, appointed director of the Metallurgical Dept., **Sam Tour & Co., Inc.,** New York.

James L. Zimmerman, appointed carbide service engineer, Chicago district, **Firth Sterling Inc.,** Pittsburgh.

Robert K. Townsend, rejoins technical staff, **G. Whitfield Richards,** Philadelphia.

John W. Schmidt, joins **Arthur D. Little, Inc.,** Cambridge, Mass.

Phillip C. Althen, appointed head of the newly created Packaging section, Sales Development Div., **Aluminum Co. of America.**

Carl W. Kalchthaler, appointed chief engineer, Hyatt Bearings Div., **General Motors Corp.,** Harrison, N. J.

J. Milton Highfill, promoted to assistant superintendent over planning and tool design, Dallas plant, **Temco Aircraft Corp.**



R. G. SCHROCK, elected president, The Euclid Electric & Mfg. Co.



T. E. WATERFALL, elected president, Chrysler Motors Parts Div., Chrysler Corp., Detroit.



AUSTIN J. PADDOCK, appointed vice-president in charge of contracting, U. S. Steel Corp., American Bridge Div., Pittsburgh.

Personnel

Raymond S. Fox, appointed chief engineering consultant, Pratt & Whitney Gage Div., **Niles-Bement-Pond Co.,** West Hartford; and **Charles A. Whitney,** appointed chief engineer Pratt & Whitney Gage Engineering Dept.

Robert S. Villforth, named field service engineer, New York Div., **A. M. Byers Co.,** Pittsburgh.

K. J. Bossart, appointed assistant chief engineer, Convair Div., **General Dynamics Corp.,** San Diego, Calif.

Merlyn E. Schlenker, appointed to Chicago sales engineering staff, **Reliance Electric & Engineering Co.,** Cleveland.

Wilton G. Smith, promoted to manager, New York export office, **Hyster Co.,** Portland.

Glenn Koger, appointed manager, Torrance plant, **Rome Cable Corp.,** Torrance, Calif.

Harry R. Meyer, named manager of sales, By-Products and Lukenweld Divisions, **Lukens Steel Co.,** Coatesville, Pa.

Dwight H. Ladd, appointed manager, Dallas plant, **Federal Electric Products Co.** and its subsidiary, Pacific Electric Mfg. Corp.

Dan O'Madigan, Jr., named sales manager, **Packard Motor Car Co.**

Gerald G. Lipke, appointed manager of sales, **Standard Products, Hagan Corp.,** Pittsburgh.

James C. Long, appointed manager, Washington, D. C. office, Field Engineering Dept., **Sprague Electric Co.,** North Adams, Mass.; and **John P. Sheridan,** promoted to coordinator of Government Liaison.

Victor A. Olson, appointed manager, Airsupply Co., Beverly Hills, Calif., a division of **The Garrett Corp.**



R. BRUCE HUNTER, appointed vice-president in charge of manufacturing operations, U. S. Steel Corp., American Bridge Div.



J. W. MARRINAN, elected vice-president in charge of operations, Superior Steel Corp., Pittsburgh.



ALBERT P. HEINER, appointed vice-president, public relations and traffic, Kaiser Steel Corp., Oakland.



DR. AUGUSTUS B. KINZEL, appointed director of research, Union Carbide and Carbon Corp., New York.



should you have your own SLITTING EQUIPMENT?



TORRINGTON STANDARD SLITTER

compact

easily operated

quick set-ups

any combination of cuts

cuts accurate to .001"

If you use sheet metal in a variety of special widths, Torrington precision slitting machines can help you earn these outstanding benefits in efficiency and economy.

☞ *With a Torrington slitter, you need buy only standard widths — simplify your procurement.*

☞ *You eliminate the need for large unbalanced inventories of cut-to-order material.*

☞ *You can broaden your sources of supply, get faster deliveries on shorter notice.*

☞ *With a Torrington slitter, you can effect immediate savings in your material handling.*

Torrington slitting machines are available in a wide range of sizes. Torrington also designs and builds accessory equipment such as winders, coilers, pay-off stands and loaders and unloaders. Call or write for full information on the slitting equipment best fitted to your particular needs.

THE
TORRINGTON
MANUFACTURING COMPANY
TORRINGTON · CONNECTICUT

☆ BUILDERS OF:
Straighteners • Flatteners
Slitters • Flat Wire Mills
and other special
auxiliary mill machinery.

put real sales appeal in your products with MUELLER BRASS CO. forgings





Windows in this modern new Florida hospital supplied by Valley Metal Products Co.—subsidiary, Mueller Brass Co.

The aluminum hardware used on all the windows in this modern hospital is a good example of the sales appeal that can be built into a product with Mueller Brass Co. forgings. These forgings are smart in design, practical in operation, and low in cost. They can also be produced in natural bronze or chrome finish depending on the desires of the architect or builder.

All Mueller Brass Co. forgings have a dense, close-grained structure with a high tensile strength. Weight savings up to 40% are possible in the design of parts because of the close tolerances to which they can be produced. Less scrap and longer tool life result from the easy machinability of forged parts. Mueller Brass Co. is completely equipped to produce brass, bronze or aluminum forgings to your specifications. For complete details, write us today.

MUELLER BRASS CO.

PORT HURON 24, MICHIGAN

—Personnel—



DR. CARL B. POST, appointed head, Metallurgical and Research Depts., The Carpenter Steel Co., Reading, Pa.

Kenneth D. Davis, named regional sales manager, **Elastic Stop Nut Corp. of America, Union,** N. J.; **Walter H. Riley,** named regional sales manager, Detroit headquarters; and **Robert E. Jones,** assigned to the Wisconsin sales area.

D. R. Burton, appointed stamping sales manager, **Eaton Mfg. Co.**; and **D. F. Brawn,** appointed manager, Stamping Div.'s Cap Dept.

George H. Morel, appointed district engineer, Construction and Maintenance Dept., **The American Brake Shoe Co.,** New York.

Thomas W. Dunn, appointed general sales manager, **Carlon Products Corp.,** Cleveland; **E. S. Moreland,** will act as assistant general sales manager.

C. P. McKelvey, appointed industrial relations manager, Parts and Equipment Mfg. Div., **Ford Motor Co.,** Dearborn, Mich.

J. S. Roller, promoted to general sales manager, **Firth Sterling, Inc.**

Berton E. Rogers, appointed general factory manager, **Vickers Incorporated,** Detroit.

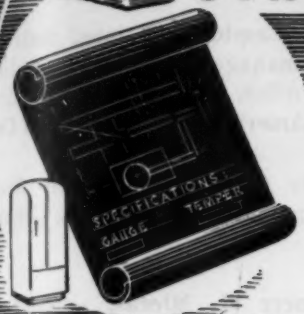
Harry B. Matzen, Jr., appointed superintendent, East Hartford, Conn. plant **Republic Steel Corp.,** Union Drawn Steel Div.

Harold E. Lewis, joins sales staff, **The Parker Appliance Co.,** Cleveland.

TO YOUR SPECIFICATIONS

GRIFFIN

COLD ROLLED STRIP STEEL



½" to 19" Wide
.002 to .500 Thick

Desired quality for forming and drawing.
Consult with us on your next cold rolled strip steel requirements.

SALES AGENTS:
WM. H. LEONORI & CO., Inc., 30 Howard St., New York 13, N. Y.; CHARLES L. LEWIS, 2450 17th St., San Francisco 10, Cal.; J. J. LAMBERT, 323 Huntington Ave., Buffalo. N. Y.; JOHN E. LOVE, 2832 East Grand Blvd., Detroit 11, Michigan.

CENTRAL STEEL & WIRE COMPANY
13400 North Mt. Elliott, Detroit 12, Mich.
3000 West 51st St., Chicago 80, Ill.
Box 148 Annex Station, Cincinnati 14, Ohio

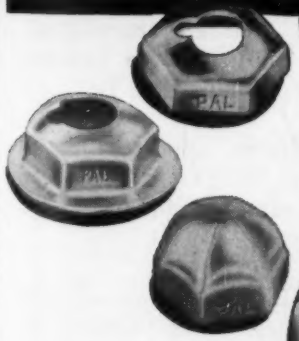
GRIFFIN MANUFACTURING CO. • ERIE, PA.

Vibration-proof Fastening—with BIG SAVINGS



PALNUT
TRADE MARK
LOCK NUTS
for quick, secure fastening at low cost

—cost less than plain nuts
—eliminate lockwashers
—speed up assembly
—save space, weight
—may be re-used

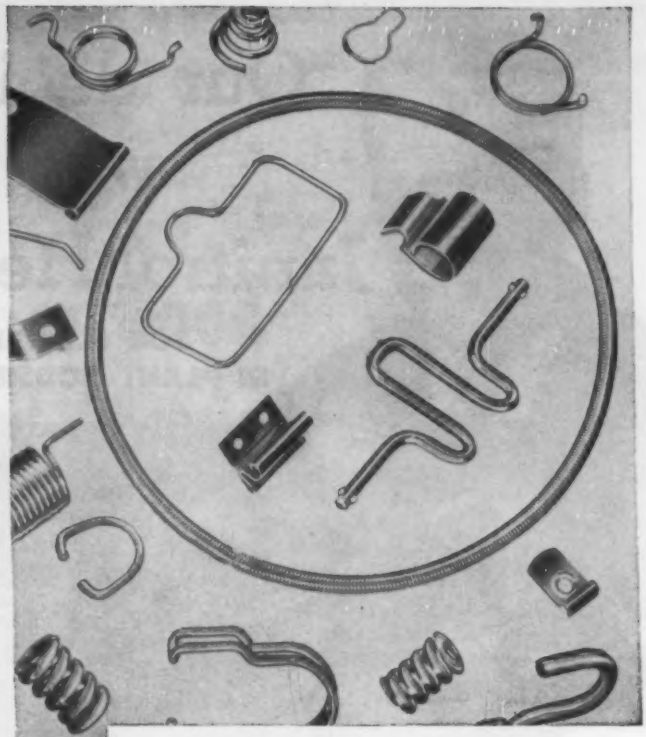


Check all your light duty nut-and-screw assemblies against the speed, savings and security of double-locking PALNUT Lock Nuts. Especially adapted to easy, fast power driver assembly of mass-produced items. Lock as they tighten, stay tight under severest vibration. Millions used monthly on all types of light assemblies.



★ For Free Samples, send details of assembly, screw size, etc. Ask for latest catalog showing complete line, sizes, etc.

THE PALNUT CO.
43 Cordier St., Irvington 11, N. J.
In Canada: P. L. Robertson Mfg. Co., Ltd., Milton, Ont.



COIL SPRING SAYS:



Got a problem on springs, wire forms or small metal stampings? Want **accelerated service?** Whether it's a problem of application, cost or supply, you get our wholehearted cooperation in finding the cost-cutting answer. You also get the best production know-how and most modern production facilities. Call or write U. S. today!

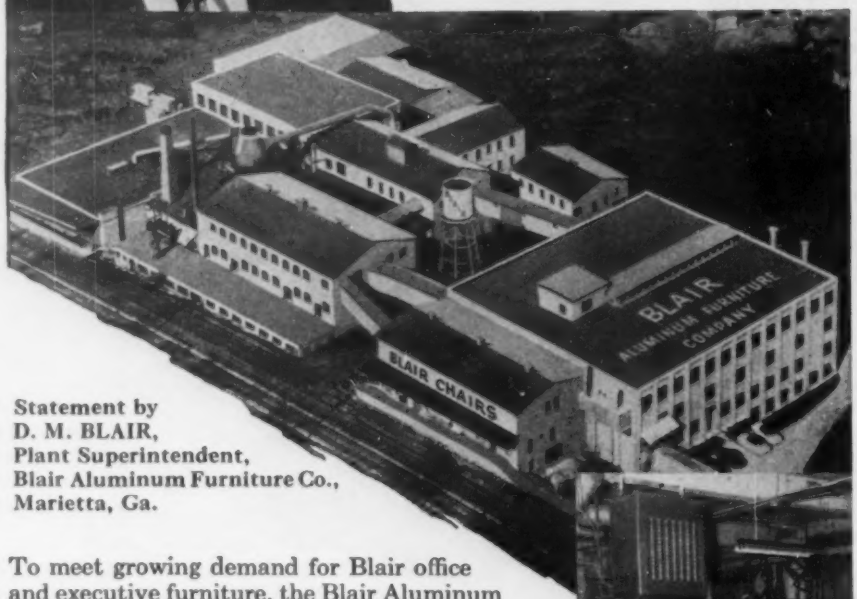
No order too large or too small!

The U. S. STEEL WIRE SPRING Co.
7800 FINNEY AVE. • MICHIGAN 1-6315
CLEVELAND 5, OHIO



"Our decision was Janitrol Heating

FOR FLEXIBILITY IN PLANT MODERNIZATION"



Statement by
D. M. BLAIR,
Plant Superintendent,
Blair Aluminum Furniture Co.,
Marietta, Ga.

To meet growing demand for Blair office and executive furniture, the Blair Aluminum Company moved into an existing plant with 5-times the previous floor area. The new plant was completely modernized and re-equipped for quantity production of quality upholstered aluminum office furniture.

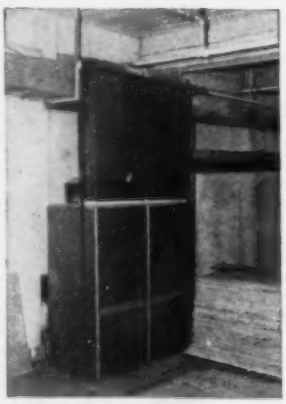
In planning comfort features into the remodeling, Mr. D. M. Blair replaced the old stoker-fired steam system with Janitrol units. The manufacturing area is heated by 22 Janitrol Unit Heaters and the offices by two Janitrol Winter Conditioners.

Mr. Blair selected Janitrol for its flexibility in providing balanced heating in various production areas and for the Janitrol record of trouble-free service with minimum maintenance.

For heating any area, Janitrol Unit Heaters can provide more in performance and overall economy. For full details, write today for "The Businessman's Blue Book for Better Heating".



In manufacturing areas, flexible unit heaters are placed to provide balanced heating comfort.



Office areas are heated through ducts from Janitrol Winter Conditioners in adjacent room.

®Janitrol *Gas-Fired*
UNIT HEATERS

JANITROL DIVISION

Surface Combustion Corp., 400 Dublin Ave., Columbus 16, Ohio

Makers of the famous furnaces that heat treat most of the products of American industry.

—Personnel—

Continued

Harold R. Fosnot, appointed sales manager, **Graver Water Conditioning Co.,** division of Graver Tank & Mfg. Co., Inc., New York.

J. J. Cassidy, appointed district sales manager, new Houston district office, Page Steel & Wire Div., **American Chain & Cable Co.**

Riley O'Brien, appointed fleet manager, **Inland Steel Co.,** Dearborn.

Spencer H. Mieras, appointed general manager, **Bonney Forge & Tool Works,** Allentown, Pa.; and **Kenneth Foust,** appointed secretary-treasurer.

Charles J. Blair, appointed assistant superintendent, Massillon plant, **Republic Steel Corp.,** Union Drawn Steel Div.

Robert H. Clare, appointed salesman, 11-state West Coast sales territory, **Standard Pressed Steel Co.,** Jenkintown, Pa.

Arthur W. Richards, appointed chief electrician, Allenport, Pa. Works, **Pittsburgh Steel Co.; James L. Dolan, Sr.,** appointed assistant chief electrician; **Henry Gallaway,** promoted to general electrical foreman, Sheet Div.; and Ray Cain, appointed general electrical foreman, Tube Div.

Penn R. Lindsay, appointed manager, Cincinnati, district sales office, Du Pont Electrochemicals Dept., **E. I. Du Pont de Nemours & Co., Inc.,** Wilmington, Del.

Harry Boyer, appointed representative in West Coast and Rocky mountain states, **Brad Foote Gear Works, Inc.,** Cicero, Ill.

Ellison L. Hazard, named general Manager, North-Eastern district, **Continental Can Co.'s** Eastern Metal Div.

Maurice I. Parisier, appointed exclusive export representative, **The American Research Corp.,** Bristol, Conn.

The Iron Age
FOUNDED 1855

In 30 days—

Good Industrial Movie Produced on Low Budget

◆ You'll probably agree that a good industrial movie can be a big help to sales and public relations programs . . . There's no mystery to making one on a low budget, despite claims to the contrary . . . Here's how a steel mill turned a story idea into a 16 minute soundfilm hit in just about 30 days . . . Total cost: Only $2500.

◆ Having a worthwhile story to tell is first, of course . . . Then put the story into a script with "see" and "hear" elements . . . Hire a good photo crew to shoot the picture, then edit the film and blend in some background music and the voice of a good narrator . . . What next? . . . That's all there is to it, except for extra prints to meet the demand.



By J. B. Delaney
Pittsburgh Editor

◆ HOW MUCH TIME AND MONEY does it take to produce a good black and white industrial motion picture, complete with sound? Maybe not as much as you think. Strip away the mystery that is often associated with movie production, stick to the essentials, and you should be able to create a purposeful 16-minute sound and picture story for about $2,500.

Early in March, Pittsburgh Steel Company gave advertising manager Ken Maxcy a one-month time limit and a $2,500 budget to film a new hot and cold rolled sheet mill installation. The story was important; the new mill completed a 4-year, $65 million expansion and improvement program that virtually transformed the firm into a new company.

And the story had to be told fast. The annual stockholders' meeting and a Board of Directors' dividend meeting were due the following month. Since the expansion program had launched the company into new markets, salesmen had to be impressed quickly with these potentialities. Then the story had to be shown to customers and prospects, and again, speed was the vital element.

First step for Mr. Maxcy and his advertising department was to put the story into writing. This provided a theme and covered all of the basic elements to be included in the movie.

Next the story had to be put into script form. Script writing is not hard. For anyone familiar with the preparation of feature stories or advertising copy, the same basic rules apply. The script groups the story element in two parts, (1) what you see and (2) what you hear. The two must then be integrated to tell the complete story most effectively.

In preparing the layout for a story or an advertisement, space limits what can be said. In a narrated movie the limitation on words is time, expressed in seconds.

A certain number of seconds during the film

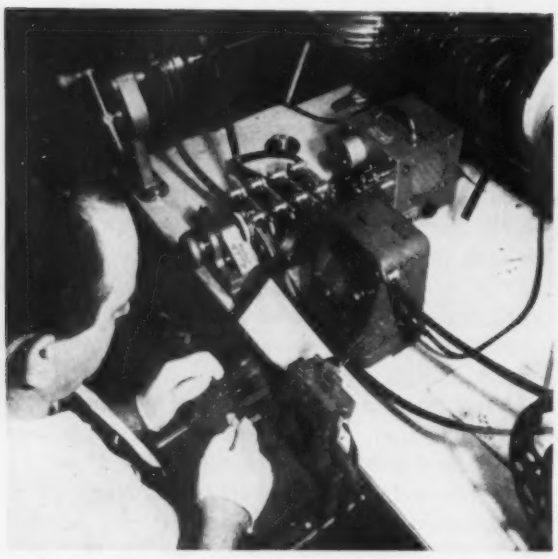


TAPING the movie narration to synchronize it with the edited film and background music.

run are available for narration or other sound. To figure narration against film time, 1½ words a second, or 90 words a minute is a good rule of thumb. The ratio may vary slightly, depending on the narrator.

Once the script was prepared, it was rapidly approved by the company's top management. Production of the movie was ready to start by March 11.

Next problem was to select a firm to make the movie from the script. Film companies come big and small, all the way from Hollywood production artists through commercial and industrial film organizations, right down to individual photographers in business for themselves.



FILM EDITOR uses the viewer-timer setup to retain and arrange only the best sequences.

Pittsburgh Steel chose Warren R. Smith, Inc., principally a producer of television films, but a firm that also makes industrial films and movie presentations of annual reports for several large Pittsburgh companies. This company was large enough to do a good job, flexibible enough to do a fast one.

Film production started right away. Operating men cooperated by having locations clear and shining. Mill electricians supplied a portable transformer and arranged for ample current to carry illuminating loads.

Sequences kept short

Rolling mill sequences proved-in exceptionally well. Due to advanced planning and a fortunate combination of circumstances, the entire film footage was shot in two days without noticeable interference with plant production. The camera crew moved rapidly from one location to another, often filming two or three sequences with the same lighting set up.

After finishing the camera work, there was two or three times as much film footage as actually needed. The film was edited mercilessly to retain only the best shots. Sequences were kept short to heighten the action, and to

keep the audience always hungry for just a little bit more.

Stock shots from a film library were used for a brief sequence on the uses of sheet steel. Other sequences were used from a previous TV film made of the hot rolled sheet mill. Dissolves were freely used for orderly transition from one scene to another. Light scenes were darknend slightly and dark scenes lightened to avoid any disturbing contrast between sequences. Art was prepared for the opening and closing titles. By March 22, the photographic portion of the movie was complete.

Next came the careful selection of background, or "mood" music from the film company's licensed library. From majestic triumphal scores for opening and closing themes, through rapid motion for rolling mills in action, to staccato cadences for other scenes, music helped tell the story. Care was taken to fade-in and fade-out from one score to another to avoid any clash of themes and tempos. The entire musical tract was then timed and taped against an actual running of the film.

Narration taped, synchronized

Finally, came the actual narration. After a few readings against the film run, some of script was changed and polished for more even flow and better balance with the photography and music.

First narrations were made by a Pittsburgh TV newscaster. Once the narration was taped, it was synchronized with the musical background, and both were synchronized with the film. The movie was printed and shown to key executives for the first time on April 5. Cost of the movie at this point was $2,500—only about $156 for each minute of film.

These costs included: Filming $870.00; Editorial $561.00; Dialogue and music recording, mixing and music fees $625.00; Laboratory fees $344.00; Narration $100.

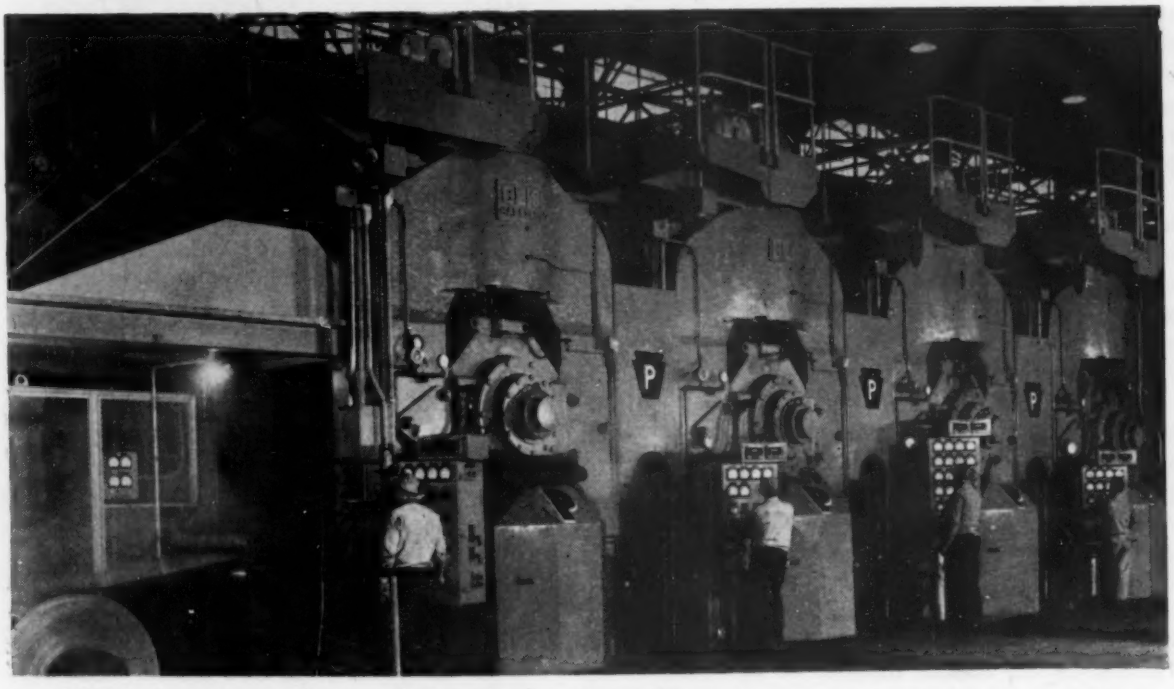
On April 9, the movie was shown to a general meeting of all field salesmen and top operating men. Before the end of April it was also shown to stockholders, the Board of Directors, prospective sales trainees, the director of purchases for a large sheet steel user, and a conference of national and local news men and editors. The movie drew complimentary comment from these varied groups.

From the standpoint of cost, the film probably paid for itself during these first showings. It provided the groundwork for at least one sale large enough to pay for the entire production.

Entire bill is low

To prepare the film for showing at district sales offices, a few sequences were altered slightly, and the "voice" for the narration was changed from a news style to a more documentary presentation. The revised form is more suitable for the informal atmosphere of a luncheon or dinner meeting, more impressive in the office of a busy purchasing agent, and will wear longer with the salesmen who must show the film repeatedly.

Cost of altering the film, adding the new "voice," and making 15 prints ran another $550. This brought the entire bill to $3,050—still only about $191 for each minute on all 15 prints.



SCENE from the finished production "Rolling Your Way" shows new four stand tandem mill.

Methods combined—

X-ray Fluorescence Cuts Metal Analysis Time



J. R. Mihalisin
Chemical Engineering Supervisor
Wright Aeronautical Div.
Curtiss-Wright Corp.
Wood-Ridge, N. J.

◆ X-ray fluorescence, used in combination with other standard chemical analysis methods, can sharply cut laboratory analysis time . . . Routine analyses for iron, chromium and cobalt in highly alloyed metals are being made by this method at the plant of a producer of jet engines.

◆ Standard curves obtained from samples of known analysis are used as a basis for comparison . . . A separate curve is required for each element . . . Day to day reproducibility is good . . . Where wet analysis for iron and chromium would require 3½ hours, the analysis can now be done in 45 minutes.

◆ COMBINED USE of X-ray fluorescence and established analysis methods has sharply reduced the time required for chemical quantitative analysis of alloys used in turbine blades for jet engines. The X-ray fluorescence method and equipment are being used for routine analyses of the alloys Nimonic 80 and Nimonic 90 at the Curtiss-Wright Corp. plant in Wood-Ridge, N. J.

Samples are bombarded with X-rays of such a wavelength that a fluorescent spectrum is emitted from the sample. Each wavelength in this spectrum corresponds to an element in the sample. Intensity of each wavelength is proportional to the amount of the corresponding element in the sample.

A geiger counter measures the intensity of the wavelengths emitted after they have been separated by a 3-dimensional diffraction grating. The latter is usually a single crystal of mica, lithium fluoride or sodium chloride. After calibration procedures are established, quantitative analysis is possible.

The technique, made possible by development of the X-ray Fluorescence Spectrometer*, is limited by the atomic number of the element and the amount of the element present. With most equipment it is impossible to analyze for elements below atomic number 22 without using special chambers containing helium. Most work to date has been with elements in the range of 0.10 to 30 pct concentration. It is necessary to consider the percentage composition and the atomic number together because they both affect wavelength intensity.

The optical emission spectrograph lends itself quite readily to low concentrations and elements below 22 in atomic number. Thus optical spectroscopy and X-ray fluorescence essentially are complementary and are used in this fashion in this laboratory.

Nimonic 80 and Nimonic 90 have the nominal compositions given in Table I. Iron and chromium in Nimonic 80, and iron, chromium and cobalt in Nimonic 90 are quantitatively analyzed by means of X-ray fluorescence in this laboratory. Analysis for cobalt in Nimonic 80 is not normally requested here.

Quantitative analysis by X-ray fluorescence here is similar to analysis by optical spectrographic methods. Standard calibration curves

* Norelco Reporter, Sept., 1953, North American Phillips Co., Mt. Vernon, N. Y.

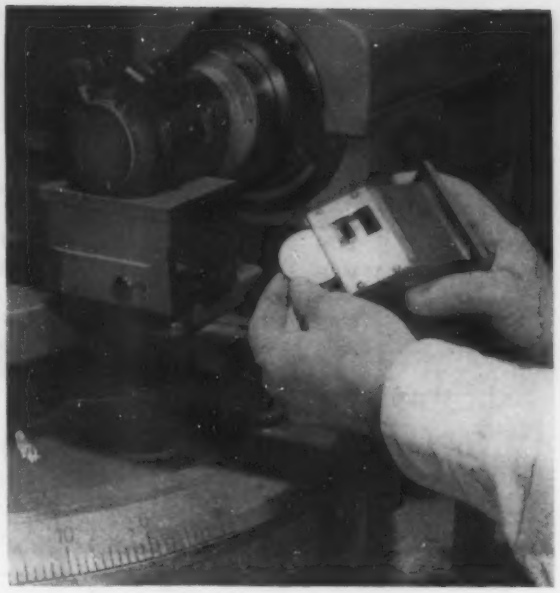
are obtained by using samples of known composition that cover the concentration ranges expected in the unknowns. For quality control this concentration range is usually between the upper and lower limits of the material specifications.

Solid samples are used which have a flat reproducible surface. For the Nimonics, surface grinding with a silicon carbide wheel gives satisfactory results. A calibration curve for cobalt in Nimonic 90 is shown in the drawing. Intensity of the cobalt line emitted from the sample, as measured by a geiger counter, is plotted against percent cobalt for three samples varying in cobalt content.

To determine the day to day reproducibility these three samples, runs 1, 2, and 3, were run on three consecutive days. The curves are arbitrarily displaced on the intensity scale to show the parallelism of the slopes. If this were not done, all curves would coincide and comparison would be difficult.

Day to day reproducibility is good. An unknown sample can be analyzed for cobalt by measuring the intensity of the cobalt line emitted and reading the percent cobalt from the graph. From standard curves, iron and chromium or cobalt may be determined on a routine basis by X-ray fluorescence. A separate curve is required for each element.

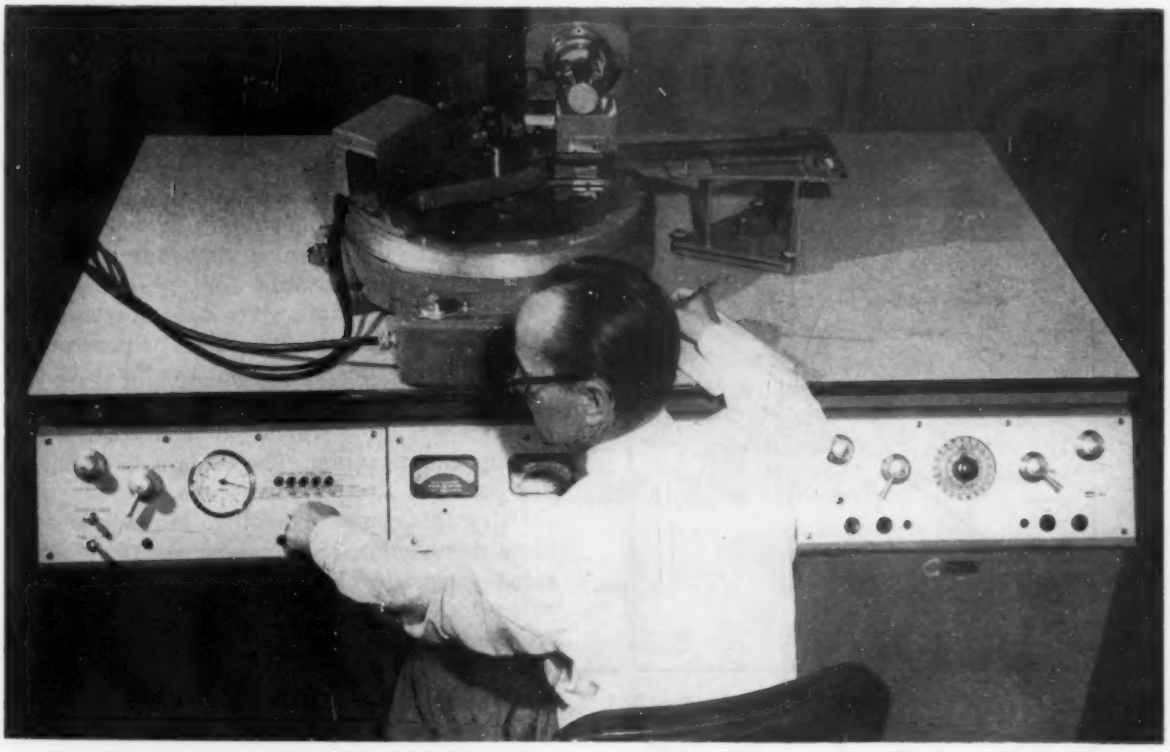
Typical data for such an analysis are shown in Table II with a comparison to values obtained by wet chemical methods. The X-ray fluorescence data were obtained on a General Electric XRD-3 fluorescence unit. The X-ray results are the average of duplicate analyses.



SAMPLE OF METAL is inserted in holder. This is placed in chamber for exposure to X-ray.

Agreement of the X-ray analyses with wet chemical analyses, Table II is good and adequate for quality control. Greater precision can be obtained from X-ray analysis by using longer counting times with the geiger counter. To date, over 400 samples have been processed successfully.

Reduction in analytical time is significant. Wet chemical methods would require 3½ hours to analyze one sample of Nimonic 80 for iron



INTENSITY of spectral line is found by using geiger counter to correlate counts and time.

TABLE I

ANALYSIS OF JET ENGINE ALLOYS

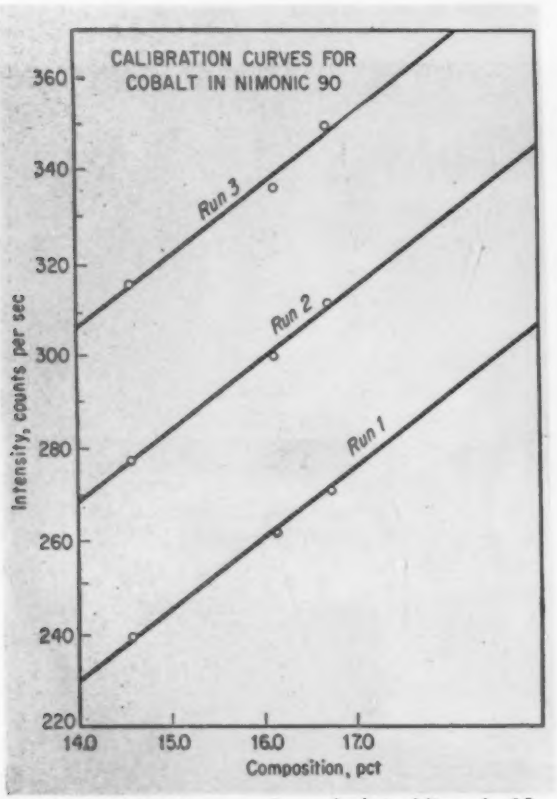
	C	Mn	Si	S	Cr	Ti	Al	Co	Fe	Cu	Ni
Nimonic 80	0.10 max.	1.00 max.	1.00 max.	0.15 max.	19.0–22.0	2.00–2.75	0.90–1.50	1.00 max.	2.00 max.	.....	Bal.
Nimonic 90	0.10 max.	1.00 max.	1.50 max.	0.15 max.	18.0–21.0	1.8–2.7	0.80–1.80	15.0–21.0	5.0 max.	0.50 max.	Bal.

TABLE II

ANALYSIS METHODS COMPARED

NIMONIC 80				NIMONIC 90					
Fe, pct		Cr, pct		Co, pct		Fe, pct		Cr, pct	
Xrf	Wet	Xrf	Wet	Xrf	Wet	Xrf	Wet	Xrf	Wet
1.28	1.21	20.40	20.12	15.95	16.18	0.40	0.57	19.48	10.69
0.85	0.81	20.01	19.95	16.14	16.41	0.42	0.45	19.49	19.25
1.32	1.25	20.06	19.50	16.16	16.26	0.42	0.39	19.46	19.46
1.16	1.17	20.34	20.60	16.19	16.23	0.46	0.44	19.67	19.67
1.17	1.14	20.41	20.45	16.23	16.17	0.50	0.51	19.42	19.55

Xrf: X-ray fluorescence.



CALIBRATION curves for cobalt in Nimonic 90. Curves are spread apart to simplify comparison.

and chromium. X-ray fluorescence does the same task in 45 minutes. For Nimonic 90 the reduction in analytical time for iron, chromium and cobalt is from 8½ hours by wet chemical methods to 1 hour by X-ray fluorescence on the basis of one sample. The test is nondestructive. Standards are practically indestructible.

For complete analysis of Nimonic 80 and Nimonic 90, practice is to analyze for carbon, manganese, silicon and sulphur by wet chemical methods. The wet chemical procedures are relatively simple and rapid for these elements. Aluminum and titanium are done spectroscopically since these elements cannot be done on the X-ray fluorescence equipment available in this laboratory. However, modified X-ray fluorescence is available which can analyze for aluminum and titanium. The remaining elements are done by X-ray fluorescence.

Using this combined method in place of complete wet chemical analysis saves 10 hours in a full analysis of Nimonic 80 and 15 hours for Nimonic 90. Reduction in analytical time ranges from 300 to 450 pct. While it is true that several samples can be done simultaneously by wet chemical methods, the major amount of time consumed in instrumentation methods is in setting up standards. Once the standards are run, successive samples can be run quickly.

New technique—

Carbides Mill Structural Members at High Speeds



By Horace Frommelt
Consulting Engineer
Detroit Milling Cutter Co.
Detroit, Mich.

◆ Machining deep, interrupted cuts on the ends of steel beams and girders has long been a problem to structural fabricators . . . Until recently, big rotary planers with high speed steel cutters have been the best answers . . . Now a small conversion unit can be adapted to an old planer bed for cutting up to 20 times faster.

◆ The small milling cutter uses indexing carbide blades, revolves at 1200 rpm . . . Eliminating the conventional large milling head gives the new unit plenty of horizontal and vertical travel . . . Finish on machined surfaces is better, indexing blades mean quick changes, longer life for tools.

◆ MACHINING the ends or edges of structural steel beams and girders to a smooth surface for effective joining or better load distribution is a troublesome but necessary job. Structural columns are heavy and unwieldy. Irregular end shapes such as those in "H" and "I" beams put severe, interrupted loads on cutting tools when ⅛ to ½ in. of steel must be removed.

For many years, structural steel fabricators have frequently used rotary planers for beam-end machining jobs. The machines have featured large diam milling heads and numerous high speed steel cutters. Cutting speeds and feeds have generally been low, and horizontal or vertical travel of the milling head somewhat limited because of its large diam.

A small, high speed milling cutter with indexable carbide blades makes it possible to convert many of the old style rotary planers to do a faster, better job. The cutter is built into a complete conversion unit called the "Futurmiller," sold by the Detroit Milling Cutter Co. and manufactured by the U. S. Engineering & Mfg. Co., Menominee, Mich.

The assembly used in the setup consists basically of a high-speed spindle mounted on a post or pedestal which is adapted to travel horizontally on the bed of an existing rotary planer.

Use of carbide cutters and high spindle speeds has reduced cutting pressures . . . This has led to lower production costs . . .

Ways on the pedestal allow vertical travel of the spindle and milling cutter.

A horizontal screw, powered by a 2-hp, 2-speed motor, moves the pedestal longitudinally, and another 2-hp motor powers vertical movement of the milling cutter. A 15-hp, 1800-rpm single-speed motor is v-belted to drive the quill and spindle at 1200 rpm.

The spindle has 3 in. of lateral adjustment for setting depth of cut. Two feed rates (30 and 60 ipm) are built into the milling unit.

Conventional rotary planers and beam facers using high speed steel cutting elements usually machine structural members at about 60 sfpm. The rate is considered good in view of the type of cut—badly interrupted and inadequately supported.

Braces, supports eliminated

The new carbide technique steps up the cutting speed to about 1200 sfpm, with the spindle operating at 1200 rpm and cutters ranging from 2½ in. to 4 in. in diam. With speeds thus increased about 20 times, cutting pressures are decreased by the same amount. This reduced pressure permits the substitution of carbide cutters for the high speed steel type.

Lower cutting pressures make possible (1) faster cutting rates; (2) elimination of braces and supports for thin members; (3) improved surface finish and (4) better cutter life and general performance.

Examples of improved machining efficiency with the new technique are numerous. On p. 113 a prototype of the high-speed unit is shown milling the flame-cut end of a bridge chord. With previous methods, such flame-cut ends were too hard for efficient cutting, and required reheating to soften the steel.



HIGH SPEED milling unit mounted on rotary planer bed. Carbide blades are being indexed.

Also, due to the high cutting pressure of the conventional rotary planer method it was necessary to temporarily support the thin sides of the chords with the cross-bracing seen in the illustration. But the 1200-rpm carbide cutter with its lower cutting pressures eliminates the need for this bracing.

In the same example the silicon structural steel, even though flame cut, in no way hindered the carbide blade cutter. In this case a 3-in. diam cutter with six ⅞-in. blades made the cut at 60 ipm. Total time was 1½ min. compared to 30 min. by the old method.

In another example the end of a buckstay is milled to a ¼-in. depth of cut over an area approximately 18 x 38 in. in just 5 minutes. On a rotary planer, with a 48-in. milling head and 56 high speed steel blades, the same job took 36 min.

The cutter in this operation is a 4-in. Futurmill with 10 1-in. spare carbide blades, each indexable 8 times. Proper negative cutting angles are built into the cutter body.

Cutting time reduced

A later model of the unit was mounted on the rotating bed of a rotary planer. Here the operation calls for milling the ends of fabricated "T" sections as shown. Cutting time has been reduced from 5 min. to 30 sec. with the new high-speed carbide technique.

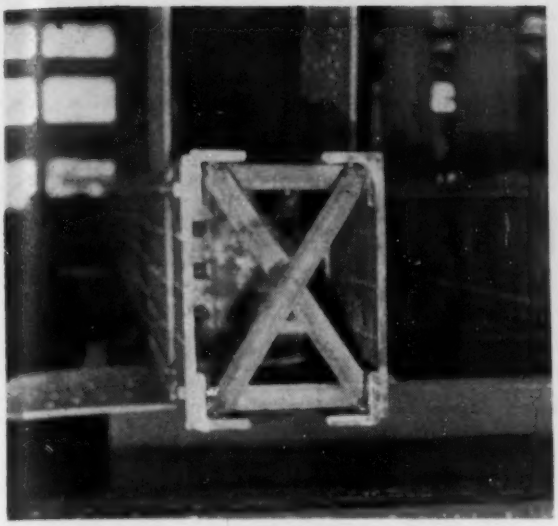
When the problem of high velocity carbide milling in structural members was first studied, three questions arose. First, would carbide cutting elements withstand the shock of interrupted cuts, as in the milling of smaller "H's" with webs and flanges not more than ¾-in. thick? Second, would use of the new technique result in reasonable tool life? Third, could the structural industry afford the skilled personnel and expensive equipment needed to grind carbide milling cutters?

Test Piece an H beam

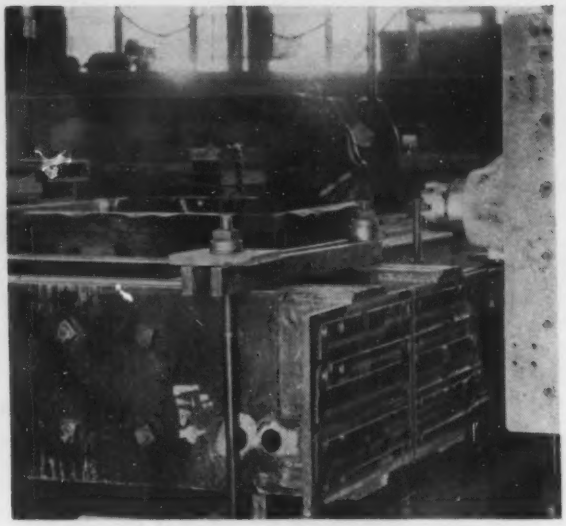
The third problem was the first to be solved—by choosing an indexable-bladed milling cutter. The parallelogram-shaped carbide blades can be indexed eight times, then returned to the manufacturer for inexpensive regrinding.

The twin problems of (1) shock resistance to interrupted cuts, and (2) carbide tool life were studied in a long series of tests Preliminary test work was done on a standard No. 4 vertical milling machine with a 15-hp motor. A 3-in. 6-station cutter with ⅞-in. square carbide blades was operated at a spindle speed of 1550 rpm.

The test workpiece was a section of 14-in.



TEMPORARY cross-bracing on bridge chords is not needed for end machining with new unit.



END of this buckstay is milled 1/4-in. deep in 5 min. Rotary planer formerly took 36 min.

"H" beam 12-in. long. It was welded to a plate which was in turn bolted to the table of the machine. Cuts ¼-in. deep were taken at a feed of 60 ipm. Under these conditions the chip load was approximately 0.008 in. Overall cutting time was approximately one minute.

Results showed that the cutter did not labor but removed metal smoothly at these high speed and feed rates. The "H" section was milled 34 times to a depth of ¼ in. before it was necessary to index the blades to a new position. Thus it would be possible to take 272 ¼-in. cuts on 14-in. beams with the eight cutting edges available.

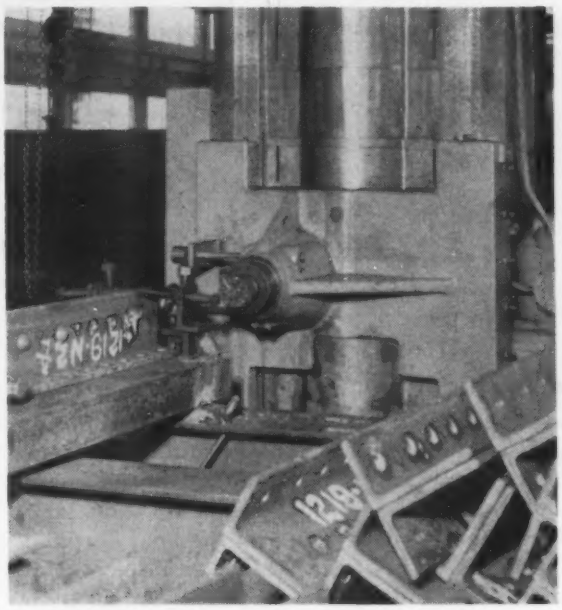
Length of travel extended

With these principles firmly established, all that remained was to refine the methods and build the technique into a workable machine for full scale application. One type of Futurmiller has been operating successfully in various structural steel plants during the past 10 months. Vertical travel of the milling head is usually 48 in. while the horizontal range on converted rotary beds depends on original bed length.

Before conversion, a rotary planer with a 12-ft long bed and a 4-ft milling head had less than 7 ft of horizontal travel because of the head diameter. With a 4-in. high-velocity cutter the converted machine has a horizontal travel of approximately 10-ft 6 in. Thus it is possible to mill a structural member 4 ft high and 10 ft long.

With the new conversion units, base plates, bearing plates and sole plates are being milled singly or in multiples (depending in size) at a considerable saving over traditional planing methods. For example, a 20 x 20 in. sole plate is quickly milled to a depth of ¼ in. in 4 min. by profiling or milling in cuts 2-in. wide. This operation formerly took 45 min. on a rotary planer.

Surface evenness is demonstrated by the fact that a thousandth indicator, when attached to the machine head and run vertically over the milled surface, shows no variation in the matched cuts. It is necessary to use an indicator reading to 0.0001 in. to note a variation, if any.



CARBIDE CUTTER mills "T" section ends in 30 sec at 1200 rpm. Slower planers took 5 min.

The steel fabricating industry has generally been quick to accept the latest developments in riveting, welding, punching, shearing, and handling. Because of the nature of the work however some of the more modern machining practices are only now coming into use.

This technique offers an important advantage for the structural steel industry. Since metal removal is not usually considered as important as fabricating techniques, it is essential to provide the simplest, fastest and most flexible machining methods. This includes tool reconditioning and changing techniques.

Standardization helps—

Preventive Maintenance



By W. G. Patton
Asst. Technical Editor

◆ To handle expanded production schedules, Buick Motor Div. requires nearly 40 miles of conveyors . . . Monorail conveyors with many special features are used extensively . . . Floor and pan conveyors, belt, screw, drag link, vibrating and pneumatic types are also required.

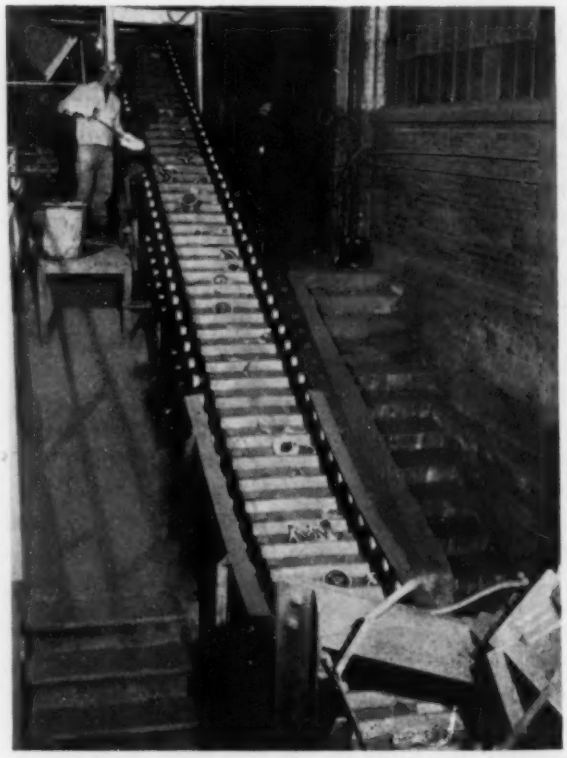
◆ "Fit the conveyor to the job" is a Buick policy—not just a slogan . . . All conveyors are engineered by the Works Engineer's office . . . Responsibility for keeping a conveyor in good operating condition is assigned by the maintenance department involved to specific individuals.

◆ The preventive maintenance program has been remarkably successful in meeting the growing requirements of the Flint plant.

◆ CONVEYORS—many types of conveyors—are the very life stream of a modern, high production automobile plant. Coordination of production by the Buick foundry, forge plant, motor, transmission, and axle plants and a large sheet metal department with the final assembly line must be faultless. Ability to meet production line requirements depends as much on delivery of materials and parts to the various manufacturing and assembly departments at just the right time as it depends on having an adequate supply of materials and parts delivered to Flint.

Buick engineers and production executives recognize that conveyor downtime can be a very costly expense item. That's why the Buick final assembly line—and other vital conveyors—are equipped with two ready-to-go drives. In case of a conveyor motor failure on the final assembly line, for example, the disabled drive is declutched, the standby drive is engaged and the assembly line continues to roll—with few, if any, jobs lost. Standby motors are also available for several of the critical conveyors in all plants.

At all times, Buick keeps a very large stock of standard NEMA totally enclosed, fan cooled motors on hand. In some areas, spare motors may total as much as one-third the number of



FOUNDRY makes use of this plate-type conveyor to handle scrap. All motor controls in the foundry are enclosed in dust tight enclosures.

Lowers Conveyor Downtime

motors in operation. Meanwhile, an electrical maintenance department is constantly at work rebuilding and re-wiring motors.

Organized crews are on hand at all times to inspect conveyors and get them back in operation promptly if a breakdown should occur. All conveyors are checked regularly. Known wear locations are closely watched. Every effort is made to anticipate conveyor failures—and to prevent them before they occur.

In some Buick departments—the foundry, for example—maintenance crews working at night on conveyors may actually exceed the number of men working on conveyors during the day. Conveyor maintenance in a large automobile foundry is, of course, very high.

Hooks designed to fit job

Actually, however, conveyor maintenance at Buick goes back much farther than duplicate drives, totally enclosed motors, ingenious safety devices and thorough and regular inspection. At Buick, conveyor maintenance really begins back at the Work Engineer's office.

After plant layout has completed its job, the conveyor problem is turned over to Buick's staff engineers. After studying the layout, type of load, operating conditions and other factors, a decision is reached as to type of conveyor required. The Works Engineer's office also determines the drives to be used, type of hooks, controls and safety devices. Many of its conveyor hooks are designed and built by Buick's own shops.

No substitute for hand greasing

Eliminating a large number of special conveyors designed and built to serve particular operations, the following general types of conveyor are employed at Flint.

1. Overhead monorail conveyors.
2. Floor type plate conveyors.
3. Rubber and canvas belt conveyors.
4. Screw-type conveyors.
5. Drag chain conveyors.
6. Vibrating conveyors.
7. Apron-type, pan conveyors.
8. Pneumatic conveyors.

The amount of maintenance required depends largely on the design of the conveyor, type of load and service conditions. I-beam conveyors are most common. Double angle track conveyors are used mostly in foundry on core ovens, and castings cooling. Tracks and trolleys are standard designs.

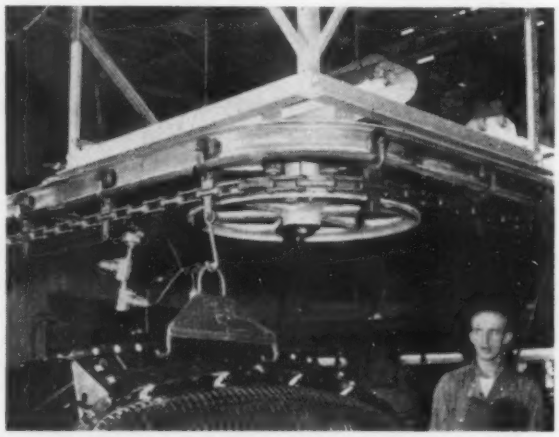
Amount of maintenance required depends largely on the design of the conveyor, type of load and service conditions.

Hooks are designed to fit the job by Buick engineers. Typical applications for I-beam overhead conveyors include the axle, transmission, stamping foundry, motor, forge, and assembly plants. Where the conveyor dips, special precautions are taken to avoid wear. These critical locations are closely inspected to detect any indications of possible breakdown.

Double angle track conveyors are generally employed where loads are heavy or elevated temperatures are involved. Typical applications include core conveyors and certain types of foundry casting cooling conveyors. The double angle track type shown in the diagram on p. 117 is widely used for this application.

No satisfactory substitute has been found for hand greasing of most overhead conveyors. While a specific lubrication schedule is not generally followed, close inspection readily detects the need for trolley lubrication.

Lubrication of foundry conveyors in high temperature core ovens presents a difficult problem. After considerable experiment, Buick con-



OVERHEAD chain conveyor of typical construction is shown here. These conveyors are designed to permit quick replacement links. Standard takeup adjustments are also used.

"Sound organization and good administration are the keys to good conveyor maintenance . . ."

veyor engineers have decided upon the use of a highly volatile liquid as a carrier for graphite. The trolley bearing is left open permanently, making it readily possible for the operator to squirt liquid directly on the bearing. The carrier evaporates, of course, leaving the graphite. Although conveyors are run dry, maintenance of foundry conveyors has been reduced since this method of lubrication was adopted.

To compensate for wear and other factors, overhead conveyors are designed to permit quick replacement links. Standard takeup adjustments are also employed. Maximum takeup of Buick overhead conveyors is 12 in. Up to 2 ft of chain may be removed, if desired.

Where conveyors dip or rise, a 12 ft radius is required to minimize wear on the flanges and other critical parts. Turns up to 45° are permitted.

Bending of hooks a problem

Horizontal sprocket design depends, of course, on the layout. Sprockets in use today range from 18 in. to 6 ft diam. The average sprocket employed is approximately 3 ft in diam.

Conveyor hooks are designed to fit the job. Adequate carrying capacity, strength and resistance to bending are given particular attention in designing conveyor hooks. Experience at Buick indicates that bending of hooks is a formidable problem to be reckoned with in operating an overhead conveyor.

A number of safety precautions are taken to minimize the seriousness of interruptions if they should occur. All drive sprockets are equipped with shear pins. The usual electrical overload devices are also provided.

Motors protected from dust

Standardization has played an important part in keeping conveyors running at Buick. All AC motors are standard squirrel cage enclosed motors, fan cooled. Where required, motor generator sets provide DC current for multiple drives. Critical AC drives are usually equipped with a dynamatic clutch and electronic controls. Most of the motors in use are of the totally enclosed, fan-cooled type. All motor controls in the foundry are in dust-tight enclosures.

Many types of insulation have been tried in an effort to improve motor life. Asbestos wire coverings, spun glass and the new synthetic insulating materials have been used experimentally.

The growing reliance on electronic controls by Buick is reflected by the fact that a separate electronics department has been set up to service electronic devices throughout the plant.

Floor-type plate conveyors are employed on the final assembly line at Flint. Plates 12 in. x 18 in. are large enough to permit workers to ride along comfortably on the moving assembly line.

Essentially, these conveyors consist of a chain with plates mounted on top. Such conveyors invariably run level. Special New Departure bearings, lubricated for life, are specified.

Unscheduled interruptions to a conveyor of this type can often be traced to parts caught in the conveyor. Both the drive motors and speed reducers may require maintenance from time to time but this is readily accomplished since duplicate drives are used on the final assembly line.

Belt conveyors have found a variety of applications at Buick. These applications include handling of small, stamped metal parts, sand handling in the foundry and the assembly of small wiring harness. Rollers used, spacing of rollers and other design factors depend on the application. Both rubber and canvas belt conveyors are employed. Width of the belt conveyors in use ranges up to 36 in.

Standard rollers are specified. Spacing varies with load requirements, ranging from 3 in. centers to 5 ft centers. Canvas is employed where loads are light and no rough handling is involved.

Training rollers reduce wear

Standard metal clips are used for splicing.

Service problems have sometimes been troublesome in the foundry where the presence of hot iron or spilled core oil may lead to unpredictable conveyor shutdowns.

Synthetic rubber as well as natural rubber belt conveyors have been tried in the foundry. A number of belts are reinforced with wire. In some instances, belts have special wire barriers every foot of length extending across the belt. These wire barriers limit tears which once made it necessary to replace long sections of belting. In most instances, only a single section now requires replacement.

Training rollers are frequently used to minimize wear at the edge of the belt.

Screw-type conveyors may be employed to carry sand or other bulky materials. Either cast iron screws or fabricated steel screws may be used, depending on the application. Generally speaking, this type conveyor is employed where it is necessary to confine the load being carried.

In addition to the occasional need for minor welding repairs, wear on bearings and on the shaft may be extensive. Hard facing materials have occasionally been used where wear on the screw is excessive.

Drag chain conveyors are used to handle

either wet or dry chips, usually under the floor. This type conveyor is also used to handle dust accumulating in dust collectors. Chips handled are mostly gray or malleable iron; a few broken steel chips are also handled by drag chains.

The chain rests in a steel trough with a special wear plate at the bottom. Such a conveyor generally lasts 4 to 5 years without extensive servicing. Except for damage that may be caused by tools or other materials which may fall accidentally into the conveyor, little maintenance is required.

To handle hot castings and forgings, Buick often uses an apron or pan type conveyor in which a metal pan rests between two chains.

Principal maintenance problems with this type conveyor involve wear on the chain and warping of the pan due to heat. Where medium loads are involved, sleeve bearings running on a hardened bushing are often specified. On heavy loads, roller bearings are used.

There has been limited use of vibrating chip conveyors at the new Buick engine plant as well as in the handling of dust or other abrasive material. (Dust from grinding wheels is particularly abrasive.) Where the load is kept dry, wear has been minimized using this type conveyor. However, where chips get wet, either from oil or moisture, pileups may occur.

Vibrating conveyors offer easy accessibility. Some fatigue failures of supports and the vibrating mechanism have been experienced.

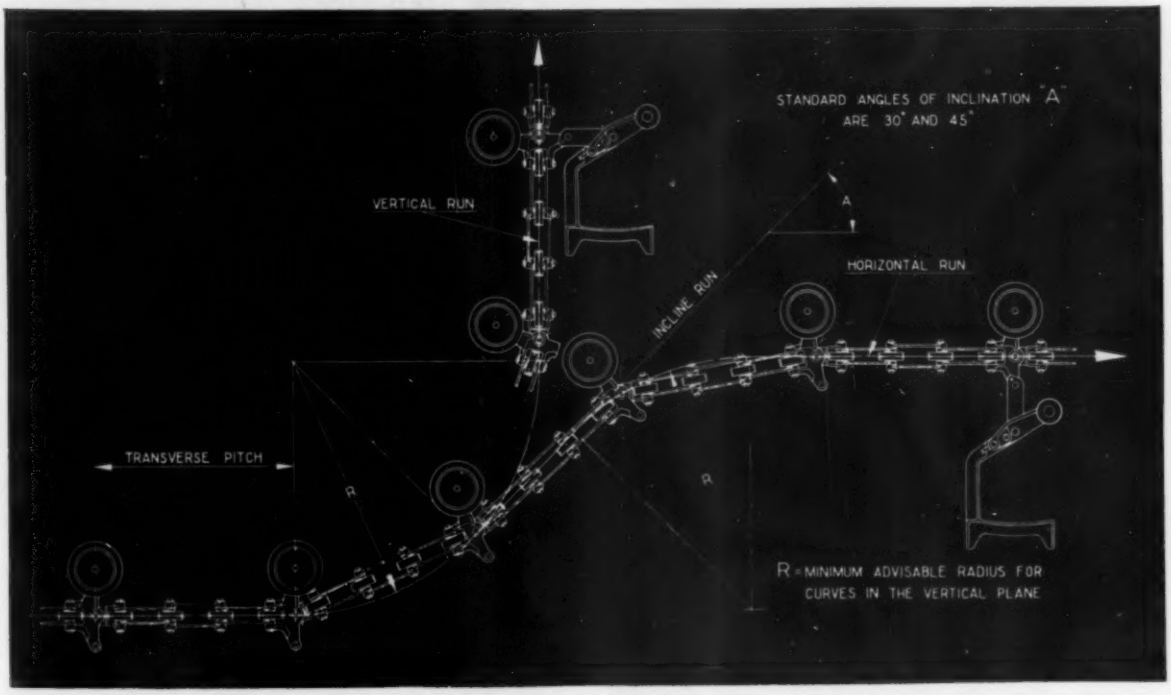
At Flint, limited use has been made of pneumatic tube conveyors. Crushed metal chips, for example, are blown through a 6 in. pipe by Roots-type blowers. The chips are raised a maximum distance of 80 ft, carried approximately 250 ft and distributed over a 100 ft hopper. Standard steel pipe and white iron elbows are specified.

Sound organization and good administration are undoubtedly the keys to successful conveyor maintenance at Buick. Design and purchasing of conveyor equipment rests with the Works Engineer's office.

At the same time, responsibility for keeping conveyors running rests with individuals assigned by the different maintenance departments. Inspection methods, lubrication schedules and other policies are left to the departments immediately concerned.



PLATE-TYPE, floor conveyors consist essentially of a chain with plates mounted on top. Plates are large enough to permit workers to ride along comfortably on moving assembly line.



DOUBLE ANGLE track conveyors, above, are used where heavy loads or high temperatures are involved. Uses include core and casting cooling conveyors. Palmer-Bee Co. drawing.

Up to 75 lb—

Develop New Machine For Large Aluminum Die Castings

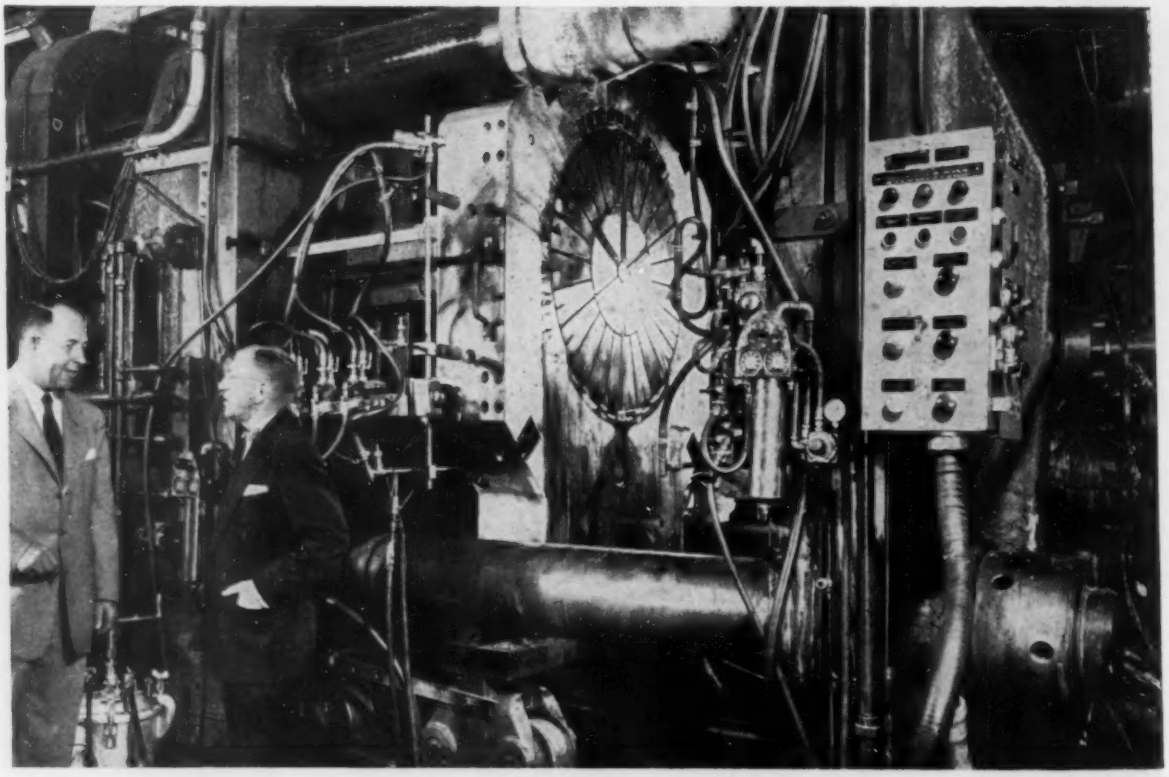
◆ Die cast aluminum parts weighing up to 75 lb are now made possible by the development of a 72-in. 250 ton die casting machine . . . When adapted for zinc, die castings up to 200 lb are predicted . . . The machine can handle dies weighing about 50 tons . . . First part run on the machine is a difficult, 31-lb, aluminum cable reel flange.

◆ Designed primarily for the production of automotive parts the unit marks a significant advance in the trend to larger die castings . . . One big use would be for die cast aluminum motor blocks . . . Other possibilities include rear deck lids, instrument panels, door frames and other large parts . . . Impetus behind trend to larger die castings lies in their weight saving potential.



By E. C. Beaudet
Technical Editor

◆ ALUMINUM die castings weighing up to 75 lb are now possible with the development of a 72-in. die casting machine. Designed primarily for the production of automotive parts, the 250-ton unit represents a major advance in the trend toward larger die castings. Previously, aluminum die castings weighing 20 lb were con-



DIE CAST aluminum motor blocks are possible to be made on this 250-ton, 72-in. die casting machine. Unit can produce 75 lb aluminum castings at the rate of 30 shots per hr.

sidered maximum for the industry. When adapted for zinc the machine is expected to die cast parts in the neighborhood of 200 lb compared with present top weight of about 45 lb. The machine will handle dies weighing up to 50 tons.

The huge die casting machine, developed by Doehler-Jarvis Div., National Lead Co. and Kaiser Aluminum & Chemical Co., opens up new areas of application where weight saving is of major importance. Only few years ago automotive use of aluminum die castings was restricted mostly to a relatively low number of small, low stressed parts. Development of automatic transmissions increased the size and number of aluminum die casting applications. Among fairly recent uses are transmission parts and torque converter and clutch housings now mainly made of aluminum die castings for greater economy and weight saving.

To cast entire motor block

Development of the 72-in. machine makes possible the die casting of aluminum motor blocks. Efforts in this direction are already underway, with Doehler-Jarvis expecting to cast the first aluminum block about the end of the year. An experimental engine block die weighing over 90,000 lb is now being built. The engine block casting without gate and after trimming will weigh about 45 lb. Automobile producers, of course, will be closely watching the results. Other part possibilities for the new machine include die cast rear deck lids, instrument panels, door frames and other large pieces.

Shoots 75 lb of metal

To meet the requirements of these large die castings Doehler-Jarvis engineers designed a machine with tie bars 72 in. apart and capable of casting about 75 lb of aluminum. Closing pressure needed to keep the two dies together during casting is about 2,000 tons. To obtain this high locking pressure, using a direct hydraulic cylinder closing method, requires a cylinder 62⅝ in. in diam at 1200 lb pressure. The use of toggles decreases the volume of fluid required in this large cylinder and increases the speed of operation.

The 36 in. die opening needed to remove large castings from the machine presented a serious engineering problem, with the normal toggle system because of the limited space in which to place the toggle. This has been overcome by providing a tandem set of toggles which can be operated singly for an opening of 20 inches, or together for a maximum opening of 36 inches.

The normal operating hydraulic pressure of 1200 psi requires large cylinders to operate the toggle and also to operate the shot. The pressure to operate the machine is set up on a basis of a hydraulic system using 3500 lb. This requires a separate hydraulic system, including special accumulators and valves.



REMOVING 41 lb aluminum die cast flange for cable reel from the 72-in. casting machine. Dies used for this part weigh 50,000 lb.

Tie bars 23 ft long are made 12 in. in diam to minimize flexing at a closing pressure of 2000 tons. Each bar weighs about 10,000 lbs. These long bars are needed to enable the machine to accommodate a maximum die height of 66 in. Adjustments to take care of different die heights are made by a hydraulic cylinder rather than by the usual manual method.

Since the normal method of hand pouring for each shot cannot be used for making a 75 pound casting, an automatic pouring ladle is employed. The ladle is electrically heated.

The shot sleeve, needed to hold enough metal to make a 75 lb shot, is 6 in. in diam. It is water-cooled externally to control the thermal expansion of the sleeve and maintain proper clearance between the water-cooled plunger and the sleeve.

For greater safety, all movements for closing, making the shot, pulling the cores, and ejecting the casting are electrically controlled.

At Doehler-Jarvis, two 12,000 lb aluminum melting reverberatory furnaces are installed to supply the molten metal for this machine.

To test the 72-in. machine and determine the shrinkage characteristics of large die castings the first part run on the machine was a large aluminum cable reel flange. The die for the cable reel flange shown on these pages weighs 50,000 lb. Part was chosen because: (a) it was difficult to produce, (b) could be made at a minimum of die cost and (c) had commercial possibilities. The cable reel casting weighs 41 lb including the gate.

Compact Heating Units Cut Downtime in Metal Finishing

◆ BRINGING solutions to temperature quickly pays off in several ways to platers. To accomplish this, many metal finishing plants have converted to a new type heating unit known as Platecoil, made by Tranter Mfg., Inc., Lansing, Mich. The units consist of two embossed metal sheets, welded together to form channels for steam or water.

Because these units are highly efficient and require less maintenance, downtime is at a minimum, resulting in higher production and lower costs. Their compactness allows more tank space for processing. Being made of different metals to meet different needs, Platecoil can be used in plating, anodizing, cleaning and rinse tanks, and for pickling, coating and drying operations.

Their efficiency stems from the design which provides a maximum of prime transfer surface. Being compact and lightweight, they are easy to handle. Since there are only two connections to make, usually located above the surface of the solution, one man can easily install or replace a unit.

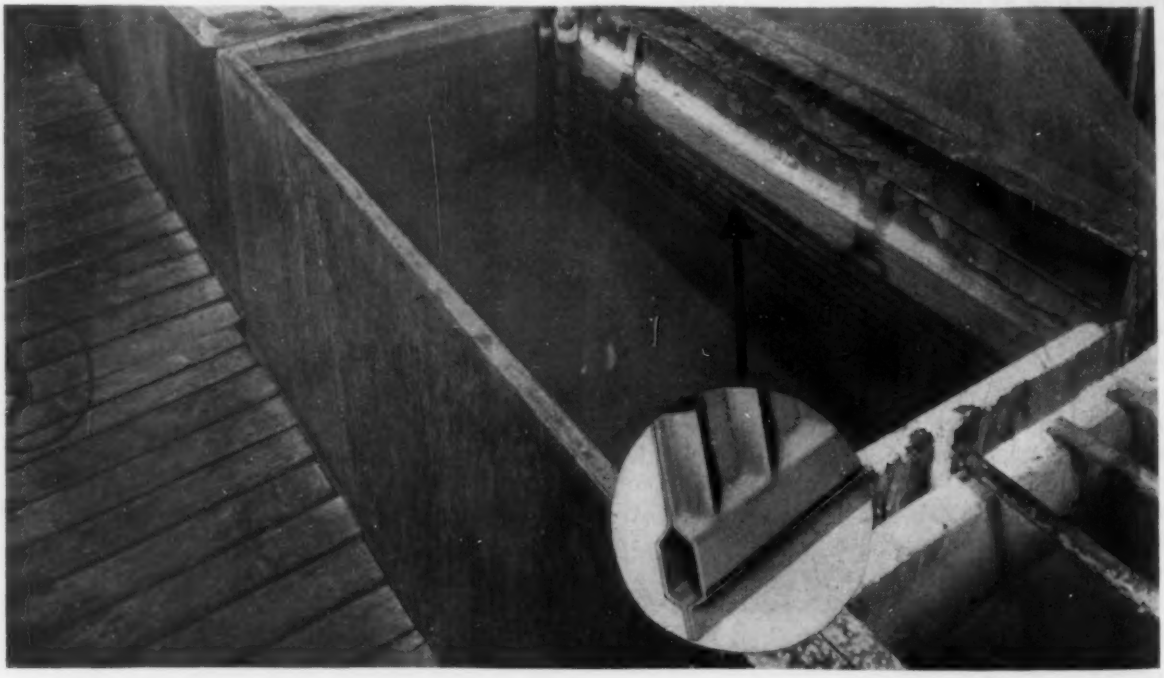
In one plant, the units were used for heating solutions in blackening, alkaline stripping and alkaline cleaning tanks ranging in capacity from 200 to 450 gal. They were not only more economical to operate than serpentine coils, which they replaced, but reduced maintenance by 50 pct.

Originally installed in another plant to provide more working space in rinse and bonderizer tanks of 150 to 2000-gal capacities, they later proved to operate very efficiently with low-pressure steam, thus cutting operating costs.

Platecoils of Monel and stainless steel are frequently used to heat pickling solutions. One firm reports a 25-pct saving in maintenance costs by using these units, but more important, 4 to 6 hours are saved in heat-up time. For example, an 1800-gal tank of solution is raised from room temperature to boiling point in about 2 hours.

In some cases, cleaning costs are eliminated entirely by the use of stainless steel units. A business-machine firm which replaced black iron coils with Platecoils had been spending $1,440 per year to remove the scale by chipping. This maintenance item is now eliminated, and in addition, warm-up time has been reduced from 2 hours to 30 minutes.

These units also have other uses in the metal finishing industry. In an automobile plant, 44 heating units were installed in a repair paint drying oven. It has capacity for six cars and can be raised from 70° to 220°F in 1 hour.



ALKALINE stripping tank has plenty of work room due to compactness of heating unit. Simple hangers permit easy replacement. Heating efficiency stems from large transfer surface.

Case History IA-112

Here's what we mean by SUPERIOR ENGINEERED FOUNDRY PRODUCTS...

...another example of how proper product development at the drawing board pays off



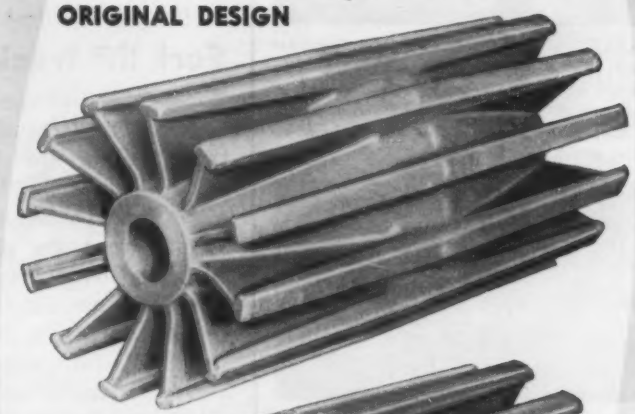
PROBLEM:

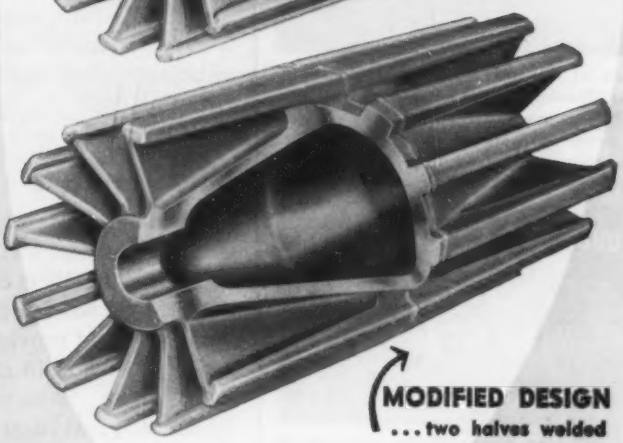
1. This 380-pound cast steel conveyor belt pulley was originally designed as a one-piece casting, making it difficult and expensive to produce.
2. The one-piece casting could not be gated and risered in a manner to insure delivery of sound castings.
3. The costly large center core could not be properly anchored to insure dimensional stability. Also, occasional cracking of the casting would occur during production.

SOLUTION:

FOUNDRY ENGINEERED CAST-WELD DESIGN. Cast the pulley in two halves designed to be compatible with good foundry practice. Weld the two halves together into a single unit.

ORIGINAL DESIGN





MODIFIED DESIGN
...two halves welded together here, forming a single unit.

RESULT: 13.6% SAVINGS

1. The improved foundry procedure, made possible by casting the pulley in two halves, required less expensive pattern equipment and reduced costs all down the line.
2. Efficient gating and risering insured consistently sound castings.
3. Elimination of the large center core greatly improved dimensional stability of the casting and eliminated the possibility of the casting cracking during production.

TOTAL COST OF PART REDUCED 13.6%

You, too, can get advantages like these! Consult our PRODUCT DEVELOPMENT SECTION regarding your problem while it's still on the drawing board. Remember, correct design benefits both you and the foundry, regardless of size of casting. Make your parts Superior Engineered Foundry products... steel castings to 30,000 pounds... malleable iron castings to 300 pounds.

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DETROIT 7, Sales Engineering Corp., 955 E. Jefferson Ave.
BUFFALO 21, Gibney-Decot Corp., 2107 Kensington Ave.
CLEVELAND 14, C. A. Lapp & Co., 1404 East 9th Street

ENGINEERED FOUNDRY PRODUCTS

SUPERIOR STEEL AND MALLEABLE CASTINGS CO.

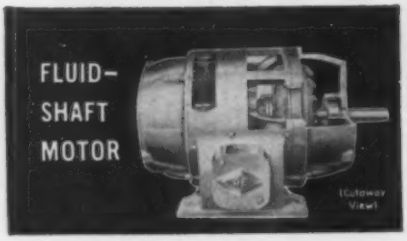
BENTON HARBOR, MICHIGAN, U.S.A.

Making Good Castings for Quality-Conscious People Since 1916

motor design problem?

...maybe one of these

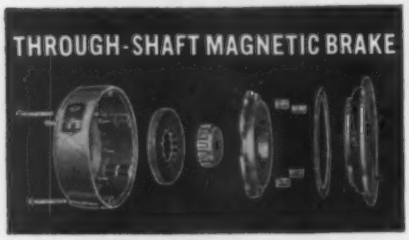
REULAND *"specials" will solve it!*



Motor with *internal* fluid coupling. Provides smooth load acceleration. More compact than separate motor and coupling. *Assures perfect alignment.* Will start heavier loads than standard motors of same horsepower. Used on cranes, conveyors, mixers, etc.



Consists of Reuland motor and worm gear reducer. Provides unlimited mounting versatility. Permits use of 1 high speed and 2 slow speed power-take-off shafts, if desired. Ideal for designing into cramped quarters. Also available with Fluid-Shaft drive motor.



"Doughnut" type design allows extension of shaft entirely through brake. Permits use of TWO output shafts per motor. Can be mounted on the input or output shafts (or both) of Fluid-Shaft motors and motoreducers. Only 6 major parts . . . self adjusting . . . half usual length.

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FREE Technical Literature

Cupolas

New developments in cupola design and manufacture, analysis of various hot blast systems and complete specifications on Whiting Corp. Cupolas are given in a new catalog. The 24-page book presents the basic advantages of cupola melting and lists significant design features of Whiting cupolas. Tuyere design and cupola accessories are also fully covered. *Whiting Corp.*

For free copy circle No. 1 on postcard, p. 127.

Fork lift trucks

Three models of the "Dynamotive," a gas fork-lift truck with electric transmission, are described in a new brochure published by Automatic Transportation Co. Complete specifications are given for 4000, 5000, and 6000-lb capacity models, which feature an electric, infinite step transmission. This eliminates the need for torque converters, overdrive mechanisms, and gear shifting. *Automatic Transportation Co.*

For free copy circle No. 2 on postcard, p. 127.

Thermistors

New manual enables users to understand easily what Thermistors are and how they can be used in detecting and compensating temperatures, and providing time delay or surge control in electrical equipment. The 52-p publication includes a great deal of important technical data. *Carboloy Dept., General Electric Co.*

For free copy circle No. 3 on postcard, p. 127.

Tools

An extensive catalog of hand tools and accessories is now available. Alphabetical listing of different types of tools is contained in the publication. Among the items described are sockets, ratchets and attachments; alloy wrenches; engineer wrenches, pliers and snips, screwdrivers, punches, chisels and bars; tool sets, boxes, chests and kits. *Herbrand Div., Bingham-Herbrand Corp.*

For free copy circle No. 4 on postcard, p. 127.

FOR YOUR COPY

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, page 127.

Air-O-Motor operators

Bulletin describes a new series of Air-O-Motor operators which are pneumatic rotor control devices. They come in spring and springless types which require a minimum of maintenance. They are extremely sensitive to changes in controlled air pressure and provide accurate positioning. Both spring and springless types are furnished in a wide variety of sizes and ranges for either horizontal surface mounting or wall mounting, and with thrust or lever action. *Minneapolis-Honeywell Regulator Co.*

For free copy circle No. 5 on postcard, p. 127.

Nut runners

New 4-p. illustrated booklet describes air-powered multiple nut runners for various bolting jobs. Units will drive two or more nuts at once, with uniform torque, safety and low maintenance. Booklet shows types available in three basic bolt patterns and various capacities. *Ingersoll-Rand.*

For free copy circle No. 6 on postcard, p. 127.

Trimming press

Higher efficiency and lower cost is said to be possible with the new Brehm trimming press. By merely changing cutting adapters a wide variety of shells can be trimmed on this machine. Details of the Brehm trimming die which converts the down strike of a press into four horizontal cutting movements are also given in the bulletin. *Steel Products Engineering Co.*

For free copy circle No. 7 on postcard, p. 127.

Plant cleaning guide

How-to-do-it charts based on actual in-plant maintenance procedures are a feature of a new plant maintenance cleaning guide. For quick reference, the charts list recommended cleaning materials, methods of application, concentrations and temperatures for such items as air conditioning and refrigeration units; compressors and condensers; descaling diesel water jackets and water-cooled furnaces; cleaning floors, oil heaters and coolers. *Oakite Products, Inc.*

For free copy circle No. 8 on postcard, p. 127.

Truck do's, don'ts

The do's and don't's of safe operation of industrial trucks are detailed in new Elwell-Parker literature. Photographs show unsafe practices such as: Carrying off-center loads, carrying loads piled too high, using trucks for elevators, operator inattention. In all 31 rules for effective, safe operation of trucks are pictured and discussed. Booklet is designed for company administrative personnel as well as truck operators. *The Elwell-Parker Electric Co.*

For free copy circle No. 9 on postcard, p. 127.

Branded bolts

Brochure on Newall bolts describes the work of A. P. Newall & Co., Ltd., in the progressive development of bolt fastenings for precision engineering work. Technical data and charts on branded bolts and studs are given. *A. P. Newall & Co., Ltd.*

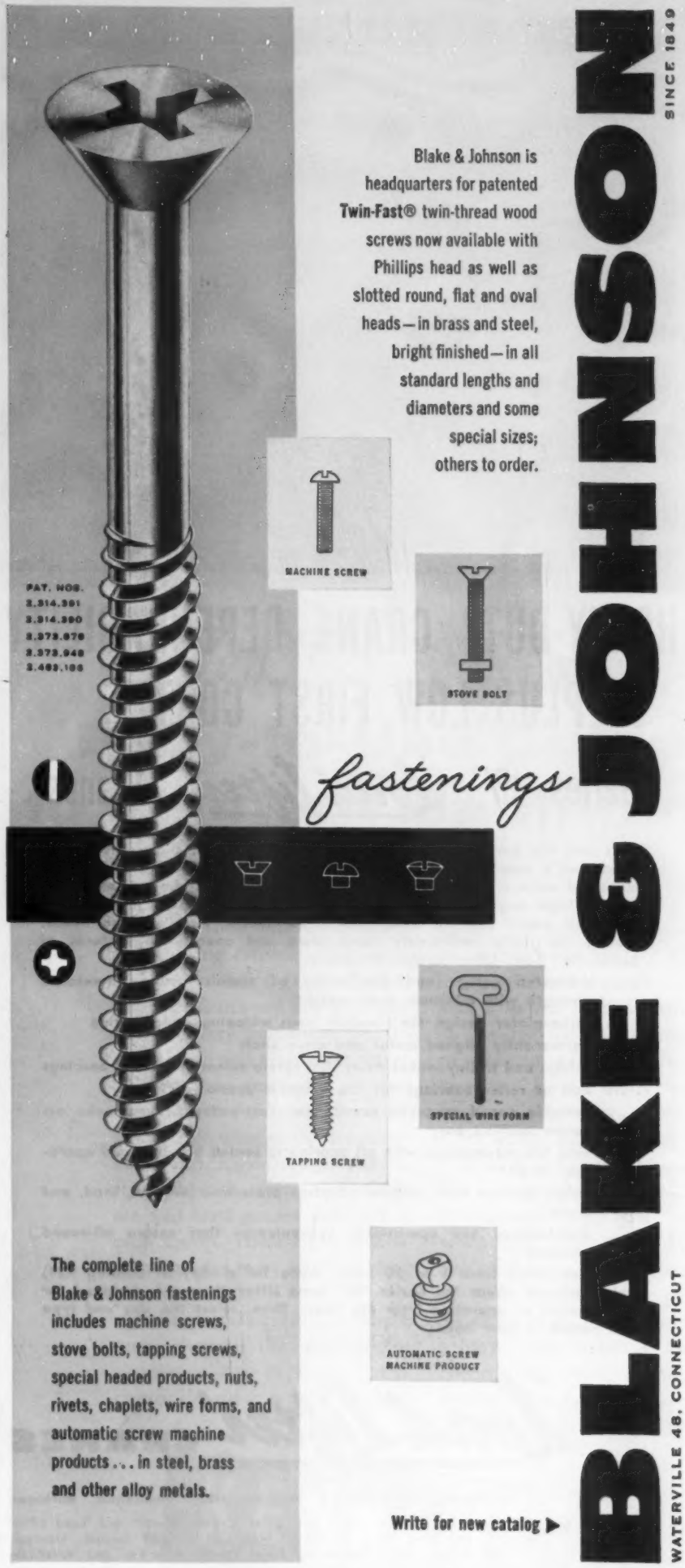
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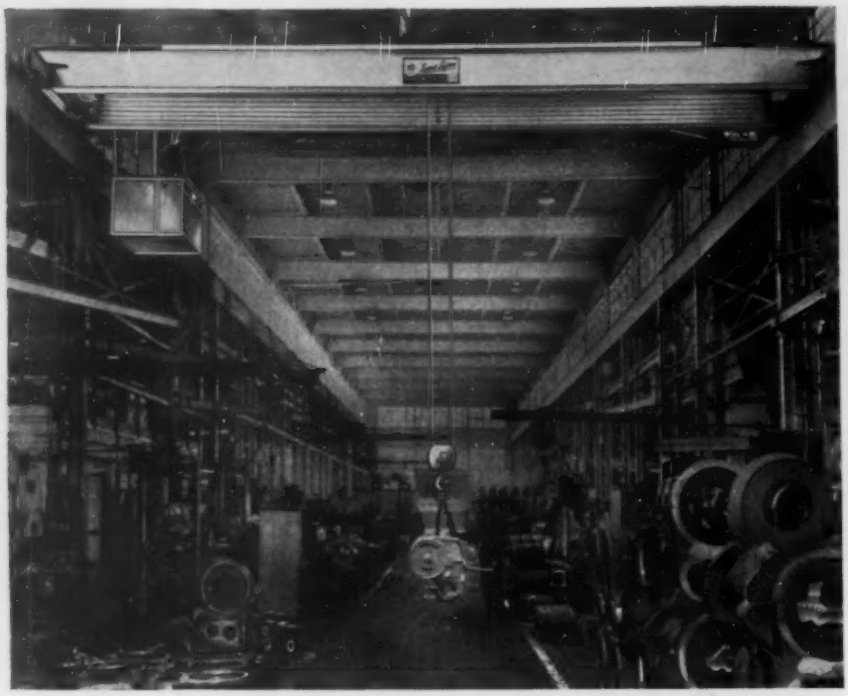
Lock washers

Featured in a new bulletin is the Shakeproof countersunk type lock washer. This unit has tapered, twisted locking teeth to reduce possibility of screws loosening. Assembly is said to be faster with these lock washers because the screws lock tight at the lightest touch. Other fastening devices are also pictured and described. *Shakeproof, Div. of Illinois Tool Works.*

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Turn Page





HEAVY-DUTY CRANE DEPENDABILITY PLUS LOW FIRST COST...

Series "D" 'Load Lifter'® Cranes

Built into the Series "D" All-Electric 'Load Lifter' Cranes are advantages which set a new standard in crane values and performance in average industrial service. Shaw-Box engineers and mass produces these cranes with a high degree of standardization that permits much lower prices than you would pay for other makes for similar load-handling needs. Among the many heavy-duty construction and operational features of Series "D" 'Load Lifter' Cranes are these:

- **. . . advanced design and distribution of metals assures maximum strength with minimum dead weight**
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- **. . . permanently aligned motor and drive shaft**
- **. . . bridge and trolley wheel axles that rotate smoothly on ball bearings**
- **. . . ball or roller bearings for the greatest possible efficiency**
- **. . . variable speed magnetic control and fast-acting brakes make accurate spotting easy**
- **. . . long life mechanisms with all gearing in sealed housings and operating in oil**
- **. . . safety devices that provide complete protection for man, load, and crane**
- **. . . maintenance and operational conveniences that assure all-round economy**

Capacities range from 1 to 20 tons. Write for a copy of Catalog 221, which tells all about the Series "D" 'Load Lifter' Cranes — designed for cage control or operation from the floor. Then, select the size and type best suited to your needs.

'Load Lifter'® CRANES

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Builders of "Shaw-Box" and 'Loaf Lifter' Cranes, 'Budgit' and 'Load Lifter' Hoists and other lifting specialties. Makers of 'Ashcroft' Gauges, 'Hancock' Valves, 'Consolidated' Safety and Relief Valves, 'American' and 'American-Microsen' Industrial Instruments, and Aircraft Products.

—Technical Literature—

Heat exchangers

The "A" (Acetaldehyde) to "X" (Xylene) of aluminum heat exchangers is the subject of *Alcoa Aluminum Heat Exchanger Tubes*, latest in the Aluminum Co. of America technical booklet series. It presents a complete story on aluminum heat exchanger tubes. Part of the 24-p. booklet covers economics of heat exchanger tubes; other sections report service and laboratory experience, discuss successful applications, fabrication methods. It is a basic reference for engineers and executives. Applications discussed include catalytic cracking, desulfurization, ammonia recovery. *Aluminum Co. of America.*

For free copy circle No. 12 on postcard, p. 127.

Grinding wheels

New 12-p. catalog describing the complete line of Sawco rubber and resin-rubber bonded grinding and cut-off wheels, mounted points and abrasive sticks and blocks has just been published by Sandusky Abrasive Wheel Co. The catalog also describes the company's facilities for manufacturing special wheels. A pricing system said to be simple and easy to use has also been compiled and is available with the catalog. *Sandusky Abrasive Wheel Co., Inc.*

For free copy circle No. 13 on postcard, p. 127.

Nylon bearings

A new 8-page illustrated catalog has just been published fully describing the standard lines of Nylined bearings and Nyliners manufactured by Thomson Industries, Inc. The advantages of Nylon as a bearing material, particularly where bearings must operate without oil lubrication, are explained. In addition, the catalog contains engineering data, installation information, and a bearing evaluation chart that has proved highly useful to many engineers. The literature also describes a number of special type Nylined bearings which are available on special order. *Thomson Industries, Inc.*

For free copy circle No. 14 on postcard, p. 127.

—Technical Literature—

Control valves

New manual contains important general information such as a detailed description and illustration of the Shear-Seal principle and its application in manual and solenoid valves. Pressure switch selection although seemingly complex, has been put into plain, understandable terms in a selection chart based on users' requirements. The data in this book will be valuable to any engineer concerned with hydraulic or pneumatic control. *Barksdale Valves.*

For free copy circle No. 15 on postcard, p. 127.

Refractory products

Brochures offer information on flint-cast for high-temperature refractory needs, Cas-to-fit for special refractory shapes, Flint-patch for high temperature requirements and Patchtite for new construction and repairs. Also illustrated and described is low alumina content silica brick. Uniline Ladle Lining Refractory and Cupola Block are two other Robinson products listed. *Robinson Clay Products Co.*

For free copy circle No. 16 on postcard, p. 127.

Presses

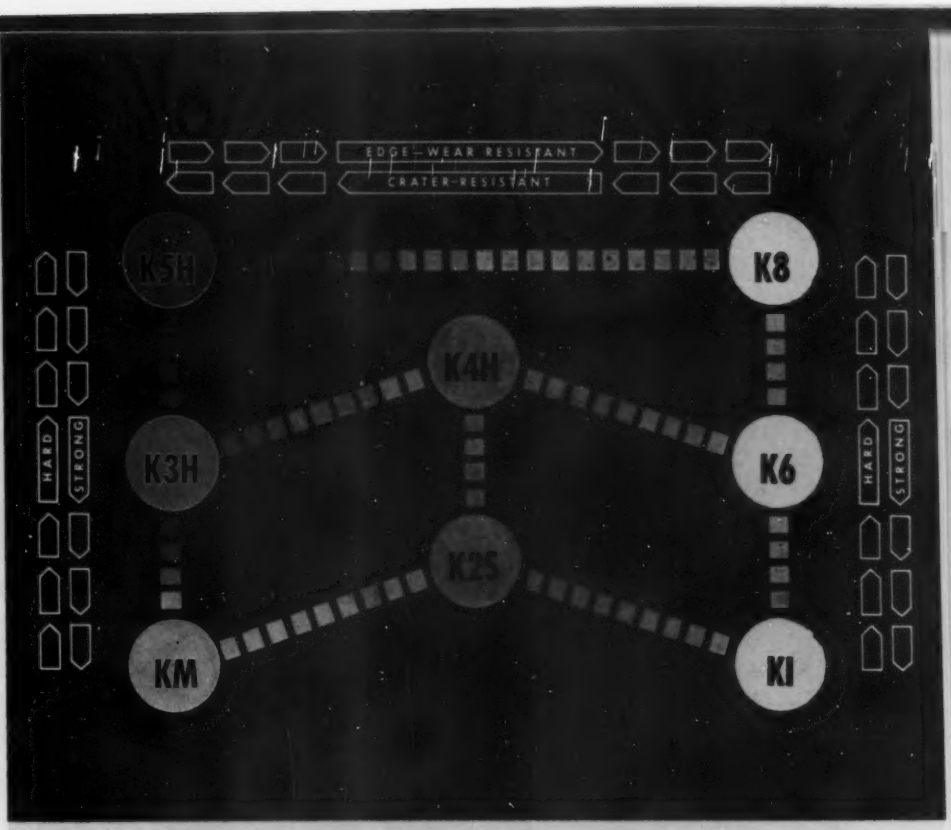
New bulletin covers die try-out presses and how they can reduce die production costs. Dake die try-out presses are electrically powered hydraulic presses that feature the flexibility and control needed for die development and testing. These presses also feature corner-post construction. *Dake Engine Co.*

For free copy circle No. 17 on postcard, p. 127.

Comparators

Bulletin describes M1233 Coordinate Comparator. This instrument is used for measurement and evaluation of photographic plates. Having a range of 225 x 225 mm and reading direct to .001 mm, it can be used for most linear and coordinate measurements of photographic records. This would include guided missile tracking photos, star plates, spectrum plates. *Gaertner Scientific Corp.*

For free copy circle No. 54 on postcard, p. 127



NOW- A Quick, Easy-to-Use Guide to Efficient Machining

Here's the first simplified system for selecting carbide tool grades. Kennametal's new grade selection method assures top tool performance on every machining job. It's easy to use and eliminates guesswork because grades are grouped according to their wear characteristics (edge-wear and crater-resistant); also according to relative strength with strong, intermediate and hard grades included in each group. These eight Kennametal grades meet all machining requirements.

Kennametal's grading system is unmatched in the industry for simplicity. Any experienced machinist can use it to quickly adjust grades for better tool performance. For example: If K3H is being used and crater is no problem, a switch to K4H, which is more edge-wear resistant, will provide longer tool life. Conversely, if K4H is being used and crater is excessive, a switch to K3H would improve tool life.

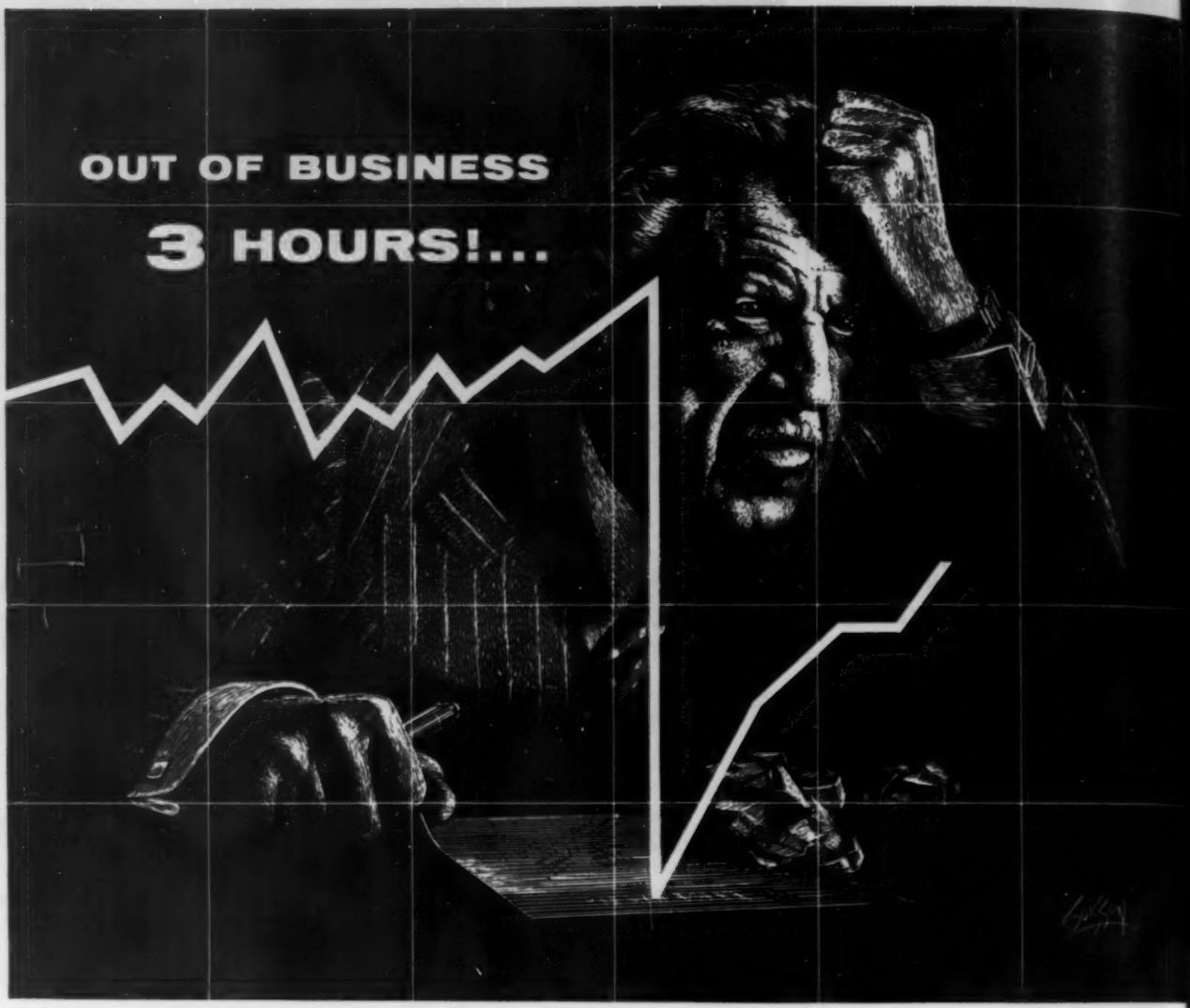
Your Kennametal representative will gladly help you apply this grade selection system to your machining operations. He can also help apply these eight grades to "wear spots" in your product, your processing lines, or any place a hard, wear-resistant metal is needed. Just give him a call. Kennametal Inc., Latrobe, Pa.

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...FOR WANT OF SHORT CIRCUIT PROTECTION



EC&M Valimitor Starters provide unlimited short circuit protection for 2200-5000 volt motors.

2008

EC&M Motor Starters could have prevented this work stoppage . . . the costly downtime, the delay, the repairs. Unlimited protection against fault currents, regardless of their magnitude, is assured by the Valimitor Starters (volt-ampere-limitor) for 2200-5000 volt motors.

When you install these Valimitor Starters, there is no need to calculate existing KVA . . . no problem of estimating future requirements. These unique Motor Starters will limit the maximum fault current to 25,000 KVA, even if the bus has infinite capacity.

In addition to the Valimitor type, EC&M Motor Starters are available in 50,000 KVA interrupting capacity. Both can be supplied with weather-resistant, explosionproof, or other enclosures to meet any operating conditions.

Whatever your requirements, EC&M Motor Starters will provide the protection you need against losses caused by fault currents.

Any way you figure it . . . short circuit protection is your best buy!



Write today for Booklet 1062 for complete details.

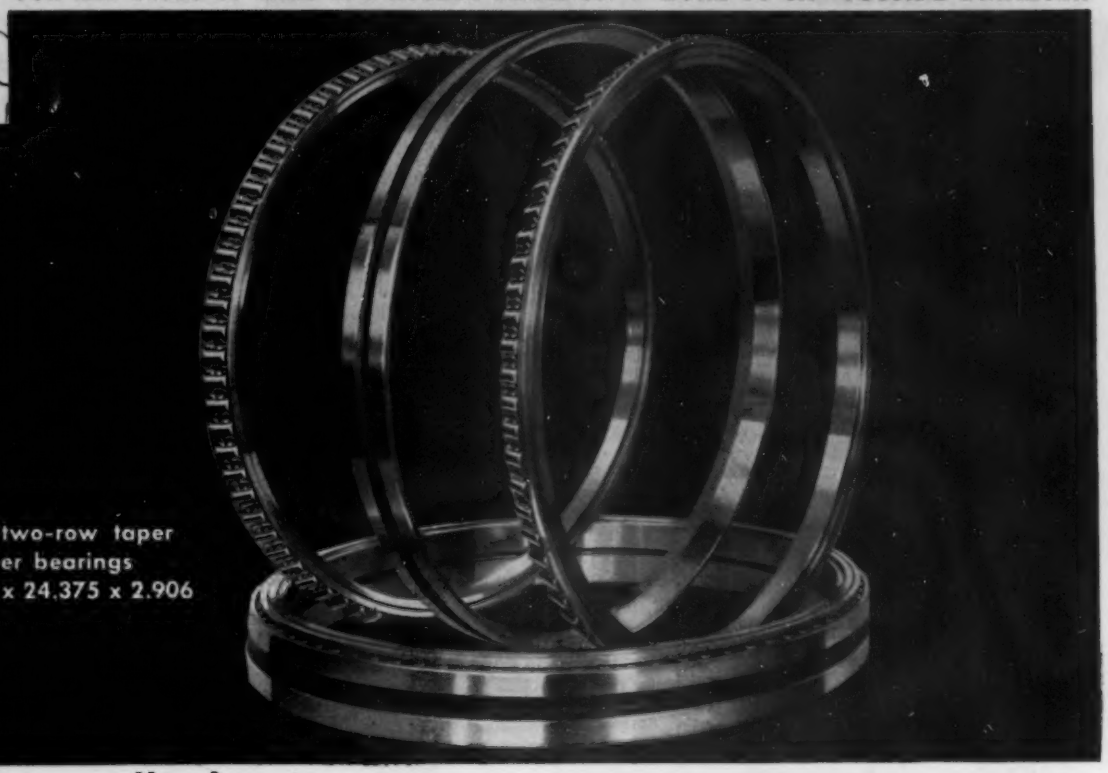
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FOR ALL TYPES OF BALL AND ROLLER BEARINGS: 4" BORE TO 120" OUTSIDE DIAMETER



KAYDON two-row taper roller bearings
21.5625 x 24.375 x 2.906

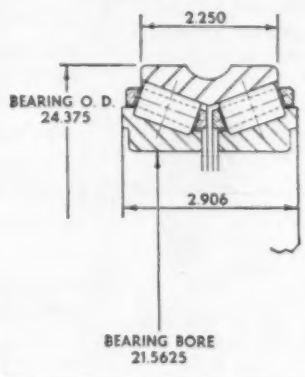
Two-row taper roller bearings...

Friction fighters, weight-saving wonders—designed and built by Kaydon

Developed for combined radial and thrust loads, these thin-section bearings are typical products of the **KAYDON** Engineering Corporation. In addition to meeting exacting space and weight limitations, they are ultra-precise.

KAYDON is able to design and produce these and similar special thin-section and/or high-precision bearings at a practical cost because **KAYDON** specializes in the unusual. If your product design requires special bearings... those removed from the normal run of bearing engineering... it will pay you in terms of time, money and product performance to contact **KAYDON** of Muskegon.

Details of the unusual bearing shown above—





Just Out! Get your copy of the new **KAYDON** *Reali-Slim thin bearing catalog No. 54.*

KAYDON Types of Standard and Special Bearings:
Spherical Roller • Taper Roller • Ball Radial • Ball Thrust • Roller Radial • Roller Thrust • Bi-Angular Bearings

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K548

PRECISION BALL AND ROLLER BEARINGS

You Wouldn't Machine This One...



Should You Machine This One?



The answer is no, because both pictures are of the same connecting rod! The top picture was taken after the rod was inspected by Magnaflux' methods. The test revealed a serious crack which makes the rod worthless, even though the crack is invisible to the unaided eye (bottom picture).

Think of the waste if such rods are completely machined and the defects found in final inspection or —worse still—in service! With inspection methods by Magnaflux, you can avoid such waste by finding invisible defects in all kinds of products—*before* you spend expensive labor and machine time. These methods actually tell you what to machine and what to salvage or scrap—at the stage where it costs you least. They can save *your* production dollars!

WRITE FOR DETAILS IN THE FREE BOOKLET

Process Control—through Methods by Magnaflux Finds the "HOW" and "WHERE" of Lower Production Costs —cites examples— shows you how!



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Technical Briefs

Noise:

Effects of noise on safety and performance discussed.

Noise and hearing damage problems in industrial plants has been brought to an annoying degree of perplexity because of unknown factors that have yet to be evaluated, John V. Grimaldi, director, Industrial Div., Association of Casualty and Surety Companies, recently told The American Society of Mechanical Engineers recently in *Mechanical Engineering*.

The problem has been aggravated by a sudden increase in the number of claims filed for industrial hearing loss—claims difficult to validate because of their complexities. Lack of reliable information on the subject, as evidenced by the wide separation of collected authoritative opinions, carries a threat of economic danger to the nation.

Other Factors Impair Hearing

Analysis of effects of noise on hearing indicate hearing may also be impaired by aging and illness. Impairment caused by noise may be temporary. The effects of noise on hearing acuity must be analyzed with respect to both intensity and frequency.

Other variables include the possibility of faulty procedures of testing either the environment or the hearing loss of an individual, variations of environmental noise, and individual susceptibility to hearing loss.

Even though it is not difficult to measure deafness, it is exceedingly difficult to separate the origin of the deafness and, without equivocation, charge industry with being solely responsible for it.

Noise Tolerance Varies

Although probable that noise has some psychological influence on man, experimentation to date on this phase leaves much to be desired.

In general, studies indicate that psychomotor activities are not significantly affected by steady or expected noises, but that discontinuous noises are more disturbing. Some people have more tolerance than others for noise.

Noise Can Be Hazard

The effects of noise on safety, speed and accuracy of performance cannot be indicated conclusively without further research. Noise, however, that interferes with a worker's ability to hear warning signals or recognize changes in normal sounds of machine operation is known to be a hazard to both machine and operator.

A manufacturing plant may have sound pressure levels in the several sound band ranges, equal to 61, 75, and 63 db for each band.

No recommended noise limits for the maintenance of safe performance environments has been suggested, nor is there evidence that this possibility is being considered.

Suggest Positive Approach

Most important phase of the noise problem is reported to be interference with communication because it may cause interruption of production, delays, and other general inefficiencies and increased costs.

Speech-interference levels, as measured in decibels, may have the same limits as those for hearing damage and psychomotor effects. If so, criteria for its control might be set "positively" in terms of what is needed for optimum production rather than "negatively" as a means for reducing the possibility for liability claims.

IF YOU WANT MORE DATA

You may secure additional information on any item briefed in this section by using the reply card on page 127. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

Machining:

New universal chucker said to speed tough jobs

Floor to floor machining cycles up to five times faster than previous methods are reported after 18 months production testing of a new 12-in. universal single spindle chucking automatic.

Latest product of the National Acme Co., Cleveland, the turret-type machine is designed to perform more automatic operations in a single setup without rehandling the workpiece.

Machining Time Predetermined

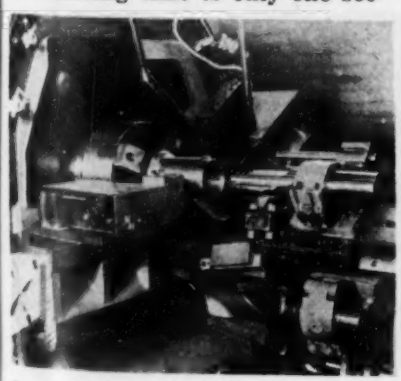
Machining time for each operation in a complete sequence is predetermined exactly in accordance with required tolerances and finish.

Each of the five turret toolslides and two cross slides is independently cammed so that the best speed and feed for each tooling station can be easily and accurately preset.

Powered For Flexibility

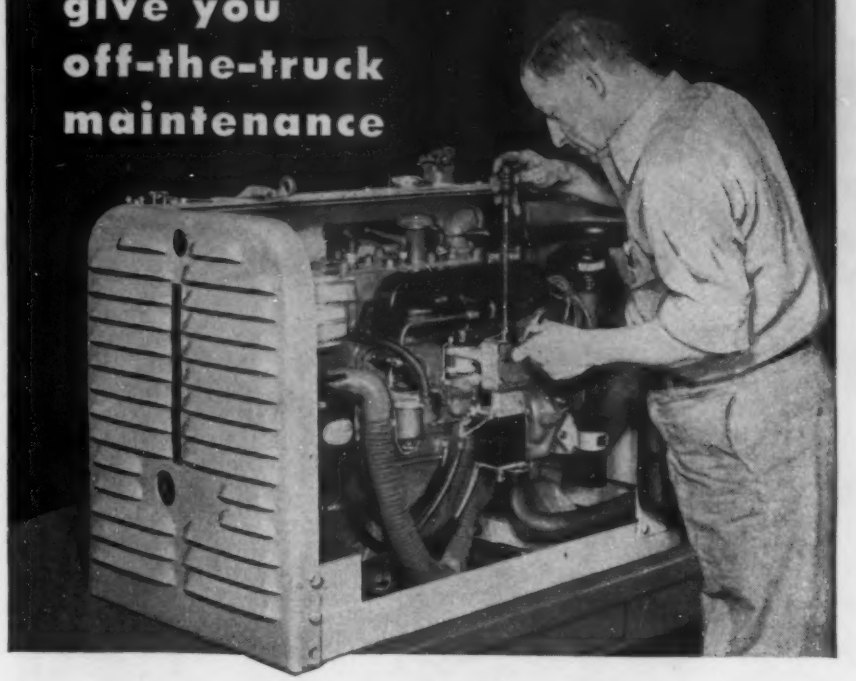
Extra speed and feed ranges, a rugged machine frame and a 25-hp motor are provided for maximum tooling flexibility. Any workable combination of carbide and high speed tooling can be used for turning, boring and drilling in the same automatic setup.

All "idle time" movements of the machine have been accelerated. Toolslides advance rapidly to cutting position and return quickly to the turret indexing position. Turret indexing time is only one sec-



Less *idle time* . . .

Removable Ready-Power Units give you off-the-truck maintenance





Keep trucks *on the job* where they belong!

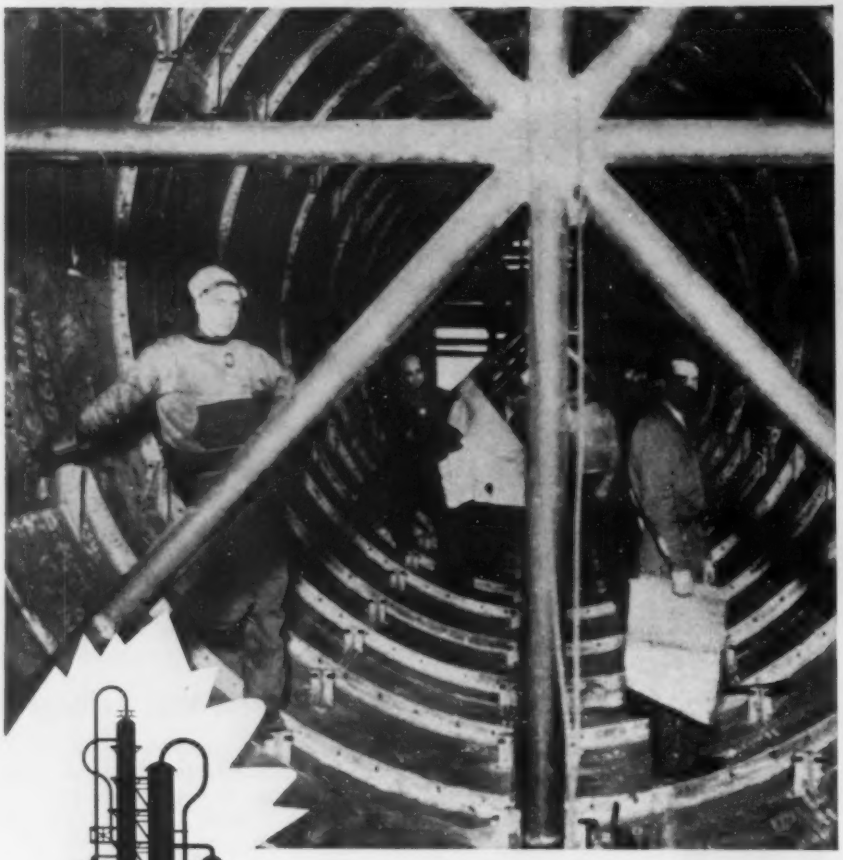
If you *like* the simplicity, economy, and full power of gas-electric or diesel-electric drive . . . if you *like* the idea of engine tune-up without truck downtime . . . READY-POWER IS THE ONLY ANSWER. Power units may be installed or removed from trucks *in minutes!* Sizes for all makes and types of electric industrial trucks. Write for details.

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Manufacturers of Gas and Diesel Engine-Driven Generators and Air Conditioning Units; Gas and Diesel-Electric Power Units for Industrial Trucks

ARCOS FOR FINEST QUALITY WELDS



Acids get tamed in towers of **welded** clad steel

With no weak spots to corrode, Reactors and Towers of welded 410 clad steels can stay "on stream" constantly . . . give longer service life with reduced maintenance.

However, the success of welded equipment that handles corrosive acids depends on sound corrosion resistant weld metal. Arcos Stainless weld metal is a match for *any* job you may have. Even when other factors are involved—extreme heat or pressure —there's an Arcos Stainless Electrode to satisfy the most critical requirements. What's more, if you're faced with an unusual fabrication problem, Arcos technical assistance provides an additional bonus of help. Arcos Corporation, 1500 South 50th Street, Philadelphia 43, Pennsylvania.

WELD WITH ARCOS

STAINLESS RODS AND ELECTRODES

Easy access to tooling zone simplifies changes and adjustments . . .

ond between any two of the five turret toolslides.

Free From Gadgets

The new chucker is compact, free from gadgets and easy to operate. The air chuck is opened and closed by a foot pedal switch. Other manual controls are grouped on a push button panel on the front of the machine.

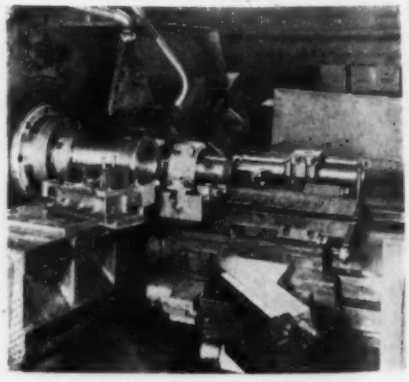
The new Acme-Gridley Model MC can be readily adapted to an automated line. An open tooling zone and easily accessible chucking area leave plenty of room for the use of automatic loading equipment if desired.

Tools Easily Reached

The tooling zone is open, at elbow height, with no interference from shafts or accessories. This gives the operator quick and easy access to all tooling and toolslide cams for purposes of change or adjustment. Heavy cross slides and turret slides are free from excessive overhang and built for rigid support of carbide tooling at high speeds.

Can Skip Index

Turret slide indexing is fast, shockless and independent of cross slide control and other machine movements. It is practical to "skip index" through one or more turret positions, or overlap shorter end operations while continuing longer forming cuts with cross



With new automatic . . .

tools. An air clamping mechanism locks the turret after indexing.

The five turret slides are operated in working position by independent cam dogs located on a large drum behind the headstock. The cam dogs trip individual timing control switches during the machine cycle. The two cross slides are operated by precision cut, flame hardened steel cams located beneath each slide.

Several solid and master collet blank jobs were among those run on the new 12-in. universal chucker. First operation setups on these parts involved form turning and heavy drilling through a solid slug of 4150 special collet steel. Tooling included both carbides and high speed steel.

Automatic speed changes were preset in the machining cycle to insure maximum tool efficiency and highest precision for each cut. As a result, floor to floor time with the new model MC chucker averaged almost three times faster than methods previously used.



MAKING CUSHION SPRINGS

A coil spring "takes off" from one of 12 coilers in the Chester, Pa., plant of the Reynolds Spring Co., Jackson, Mich., manufacturer of automotive and industrial springs.

Four of these components serve as supports for each cushion spring produced by the company for a leading automaker. The Welles coiler, which can be adjusted for different model requirements, consumes more than a half mile of steel wire in ejecting 2000 finished springs during each hour of operation.

ARCOS FOR FINEST QUALITY WELDS



NEW aluminum spooled wire offers these advantages for inert gas welding

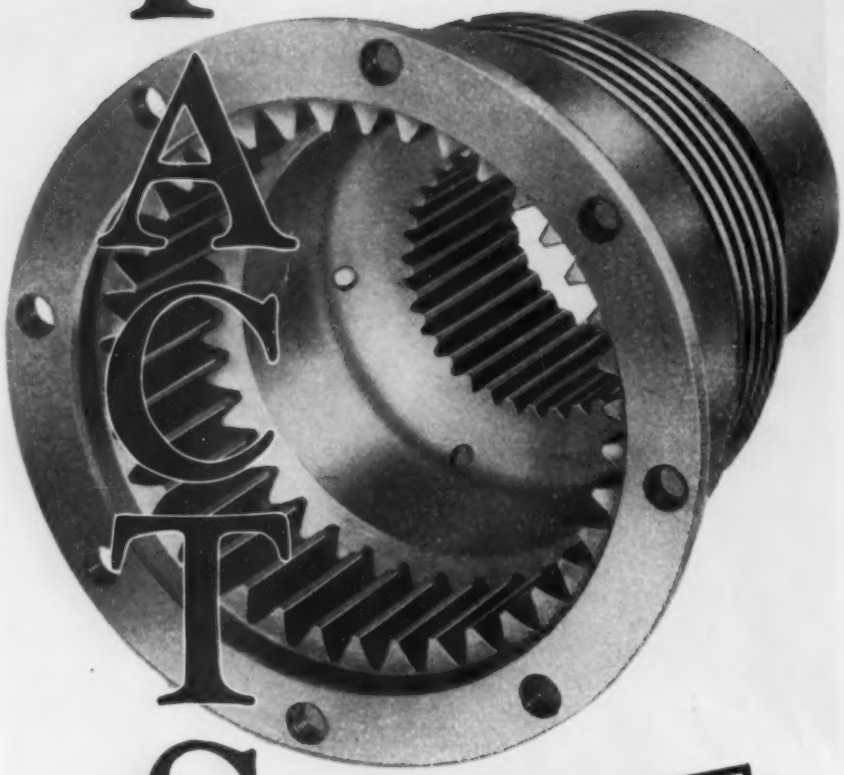
From the standpoint of economy and speed, the welding of aluminum by inert gas produces good welds, providing the aluminum wire is properly prepared for this process. Arcos has established the controls necessary to assure the high quality required for good welds. That's why it will pay you to specify Arcos ALUMAR Spooled Wire. Its uniform, clean finish gives better conductivity and arc stability. Each batch is pre-tested to assure you weld metal characteristics within a critically controlled range.

Write today for our new Bulletin on the complete line of Aluminum Wire—Spooled, Coiled, Straightened and Cut. For every aluminum welding job, Arcos offers the wire you need for the results you want. Arcos Corporation, 1500 South 50th Street, Philadelphia 43, Pennsylvania.

WELD WITH ARCOS

ALUMINUM AND STAINLESS SPOOLED WIRE

FACTS for fact-hungry Design Engineers!



WE do not *make* and *sell* gears. We endeavor to "sell" you on our gear engineering know-how and — with your specifications as a base — produce gears which will provide maximum service in accordance with their pre-determined function, operating and environmental conditions and the characteristics of the system of which the gear is a part. Obviously, Perkins' facilities to do all this pre-supposes that our *mechanical equipment* for production matches our abilities in gear engineering. It does!

PERKINS MAKES in all materials, metallic or non-metallic, and in any size, to your specifications: helical gears, bevel gears, sprockets, ratchets, worm gears, spur gears with shaved or ground teeth, ground thread worms.

*Illustrated above: Typical Perkins custom-made gear

NOTE: The **PERKINS PRECISION SPRING COILER** is the latest development in the spring coiler field and eliminates entirely the use of arbors and long set-up time. It is a complete self-sufficient machine and enables you to make the spring you want *when* you want it — in seconds. The coiler produces any type of spring, in any diameter and any pitch with this range: Wire Sizes .005 to .125. Diameter from 3/32" to 12" and larger. Size of the compact coiler is only 7½ x 16". **A POWER MODEL** mounted on a welded steel console cabinet base is also available. Full information on request.

PERKINS
MACHINE & GEAR COMPANY
WEST SPRINGFIELD, MASSACHUSETTS

Foundry:

Cement bonded sand used to produce large casting core.

Cement bonded sand was recently used by Chambersburg Engineering Co.'s Foundry Div., Chambersburg, Pa., to make a large core needed for a 48,000-lb iron casting. Neither the customary core box nor arbors were required. The cast part is an exhaust casing.

The mold for the outside of the casting was made first. This mold was lined with a layer of sand the exact thickness desired for the casting walls. The core was made within this layer of sand, making an accurate reproduction.

The core was then removed, the sand lining stripped out of the mold, and, after checking the mold and core for accuracy, the core was set in the mold for casting.

Natural hardening of the cement bonded sand and its high strength made it possible to produce the core with a minimum of internal reinforcing and no special equipment.



Cement bonded sand . . .



. . . Helps cut core costs

Stretch Press:

Convair installs big press for fabrication of aircraft parts.

An outsize stretch press, one of the largest ever made, has been set up at Convair Fort Worth, big integrated aircraft plant of Consolidated Vultee Aircraft Corp. at Ft. Worth, Texas.

The huge machine is installed in the plant's drop hammer room. A large pit—large enough for a 5-room house—was required to house the bulk of the machinery and center die mechanism. The 750-ton capacity press weighs more than 400,000 lb and rests on eight reinforced concrete piers.

For Airframe Parts

The T. W. and C. B. Sheridan Co. of New York City built the machine to Convair's specifications. Eight railway flat cars were required to transport the press to Fort Worth. Two months were spent assembling the machine and conducting tests.

Convair will use the machine to stretch and twist sheets of metal into airframe parts, thus saving much costly machining. The twisting and stretching is done by four giant jaws, working in pairs.

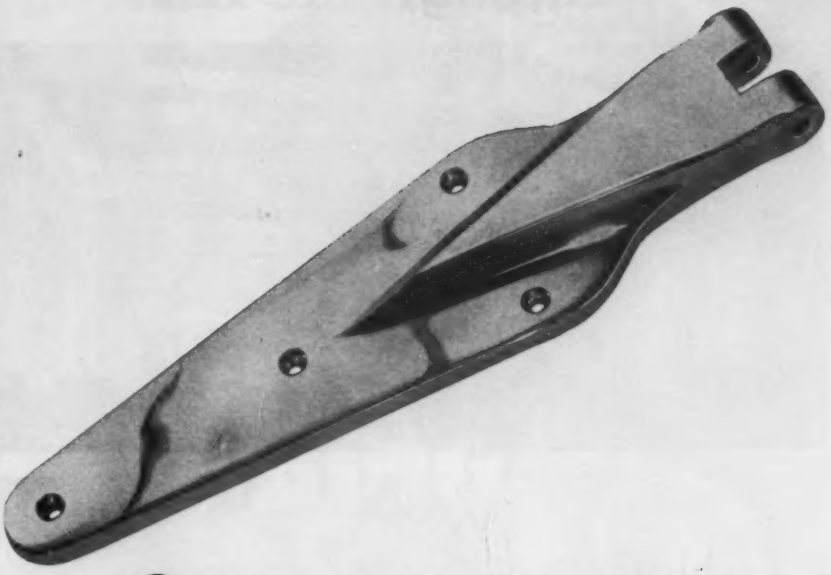
Twisting Action

One set of jaws can rotate to produce the twisting action required to form complicated contours. Die table of the press is capable of exerting an upward force of 750 tons. The press is designed to handle ⅜ in. aluminum alloy stock or its equivalent. While this press is huge and can handle maximum size of stock 6 x 22 ft, it is versatile.



Stretch press controls . . .

How would you SOLVE IT?



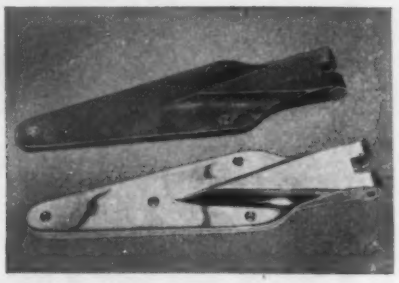
1 PRODUCTION PROBLEM:

To cut unit costs of finishing and polishing forged brass refrigerator door hinge leaves. Kason Hardware Co., had been using set-up wheels in a costly, two-step operation (prior to final buffing) that left unsatisfactory finishes, with much dragging out of counter-sunk holes.



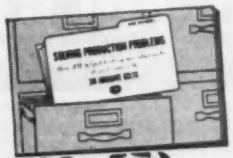
2 SOLUTION:

A 3M Representative showed this Brooklyn, N.Y. manufacturer how the 3M Method would finish and polish forgings in *one* operation, with Wetordry Tri-M-ite Cloth belts. The Grit 180 belt does the work of both a #80 and a #150 set-up wheel.



3 RESULTS:

An immediate cost saving of 40%, with better and more consistent finishes, and 3M Abrasive belts completely eliminate the dragging out of counter-sunk holes. A 3M Representative can help you solve your grinding and finishing problems, too. Call him today. There's no cost or obligation.



3M ABRASIVES

SEND COUPON TODAY

Minnesota Mining and Mfg. Co.
Dept. IA-74, St. Paul 6, Minn.

☐ Send me free booklet describing actual 3M Abrasive belt installations.

☐ Please have 3M Representative call

Name _____ Title _____

Company _____

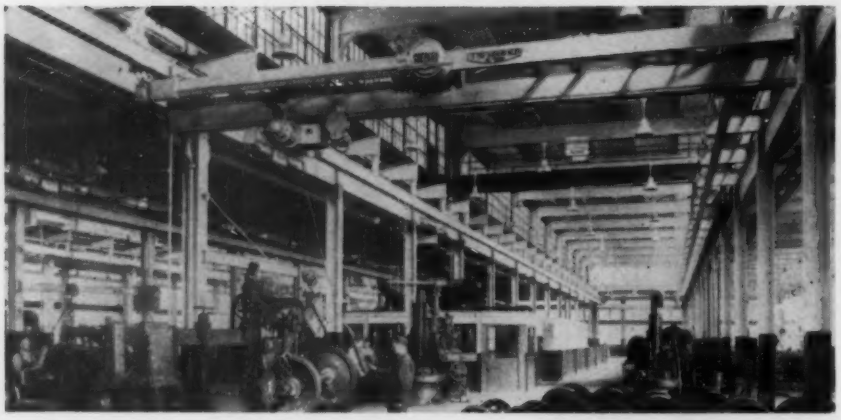
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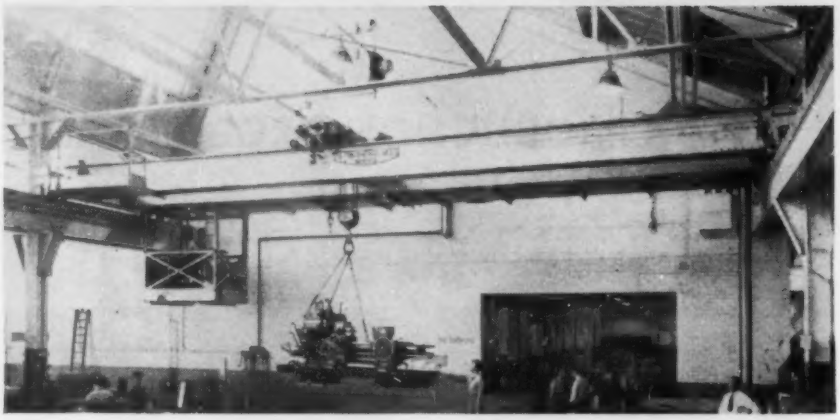
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Made in U.S.A. by Minnesota Mining and Manufacturing Company. General Offices: St. Paul 6, Minn. In Canada: London, Ont., Can. Export: 122 E. 42nd St., New York City. Makers of "Scotch" Pressure-Sensitive Tapes, "Scotch" Brand Magnetic Tape, "3M" Adhesives, "Underseal" Rubberized Coating, "Scotchlite" Reflective Sheeting, "Safety-Walk" Non-slip Surfacing.

Place it there . . . through the AIR





SHEPARD NILES Crane

● Handling moves slowly at ground level where there are men, material and machinery blocking the way. But up in the air, it's different! Handling is uninterrupted—loads are moved to their destination safely, easily with a Shepard Niles Crane.

● Efficient through-the-air handling can benefit your plant! Let the Shepard Niles representative show you how. The crane he suggests will be one that is engineered to the job you want it to do. And remember: all component parts are designed and built by Shepard Niles specifically for crane operation—your guarantee of years of dependable crane service with a minimum of maintenance.

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( ) *Please send me your latest Crane Bulletin.*
( ) *Please have a representative call.*

NAME _____ TITLE _____

COMPANY _____

STREET _____

CITY _____ STATE _____

New Books:

Handbook adds to material on gears and bearings.

"Machinery's Handbook," Fifteenth Edition. Of particular interest in this edition are a revised and rearranged spur gear section and an entirely new section on generated bevel gears. A new section on fine-pitch worms and wormgears has been added in which the step-by-step design procedure is outlined. Important changes in the dimensions of American Standard square and hexagon bolts and nuts are summarized, with a table comparing the old and new across-flats dimensions.

The section on ball, roller and needle bearings is completely new and gives in considerable detail and scope the descriptions, designations, ranges of standard sizes, boundary dimensions, and tolerances for standard anti-friction bearings.

New milling cutter section now gives extensive tables of dimensions and tolerances covering the various types of American Standard milling cutters, together with a table showing four types of setups for grinding clearance angles on milling cutter teeth. The Industrial Press, 148 Lafayette St., New York 13. $9. 1911 p.

"Canada 1953," official handbook of present conditions and recent progress. Serves as a companion volume of Canada Year Book by offering to the public in Canada and abroad an attractive and well-balanced picture of the economic and social life of the nation. Dominion Bureau of Statistics, Department of Trade and Commerce, Ottawa, Canada. 320 p.

"Statistical Theory of Extreme Values and Some Practical Applications," by E. J. Gumbel, National Bureau of Standards Applied Mathematics Series. Revised text of material presented in series of four lectures. It is the first comprehensive statistical treatment concerned with an extensive series of recent problems of considerable

—Technical Briefs—

interest to engineers and statisticians. Methods described are based on the asymptotic theory of extremes, and are illustrated by many examples of actual data together with necessary tables and graph. Government Printing Office, Washington 25, D. C. 40¢. 51 p.

"Metals and How To Weld Them," by T. B. Jefferson and G. Woods. Combination text and reference book to give all users of welding a practical work knowledge and source information for designing and making better welds at lower cost. Gives procedures for welding mild, medium and high carbon steel, alloys, cast iron, hardfacing, stainless and high chromium steels, austenitic manganese steels, tool and die steels. James F. Lincoln Arc Welding Foundation, Cleveland 17, Ohio. $2.00 U. S. A., $2.50 elsewhere. 322 p.

"Handbook of Industrial Electroplating," by E. A. Ollard, and E. B. Smith, Second edition. This edition contains new sections dealing with water and drainage, the purification of solutions, safety precautions and ventilation in plating shops, and the special problems of costing in such shops. Handbook is intended for all those who design, erect, maintain or operate electro-deposition plants and also for laboratory workers who have to deal with the testing and maintenance of plating solution. Iliffe & Sons, Ltd., Dorset House, Stamford St., London S. E. 1. (Handled in America through British Book Centre, Inc., 122 E. 55th St., New York 22.) $6.75. 364 p.

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automatic, high-speed heavy-duty
WIRE STRAIGHTENING
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CUTTING MACHINES
Sizes for .012" to ¼" WIRE
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B ETTER PRODUCTS AT LOWER
C OST

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A Quality Product



ROUND
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SQUARE-RECTANGULAR
½" to 2" O.D. 20 gauge
1" to 2¼", 14, 16, 18 gauge
Carbon 1010 to 1025
Michigan Tubing
has uniform strength, weight, ductility, I. D., and O. D., wall thickness, machinability, and weldability. It can be flanged, expanded, tapered, swaged, beaded, upset, flattened, forged, spun closed, fluted, and rolled. Available in a wide range of sizes, shapes and wall thicknesses, prefabricated by Michigan or formed and machined in your own plant.

Muffler Inlet Pipe

This is an excellent example of Michigan workmanship in the performance of several intricate fabricating operations to most exacting tolerances.

The pipe manifold end is expanded to 2.225" I. D., a flange superimposed, and a flanged ferrule press-fitted for immediate assembly to exhaust manifold. Two bending operations with minimum reductions permit full flow of gas to hold back-pressure to a minimum. Muffler end diameter of tube is increased by expanding and a bead superimposed to form a "gas-tight" joint.

Michigan engineering and fabrication know-how make for accuracy and economy in the manufacture of this and many other tubular products. Why not consult Michigan about your fabrication problem.

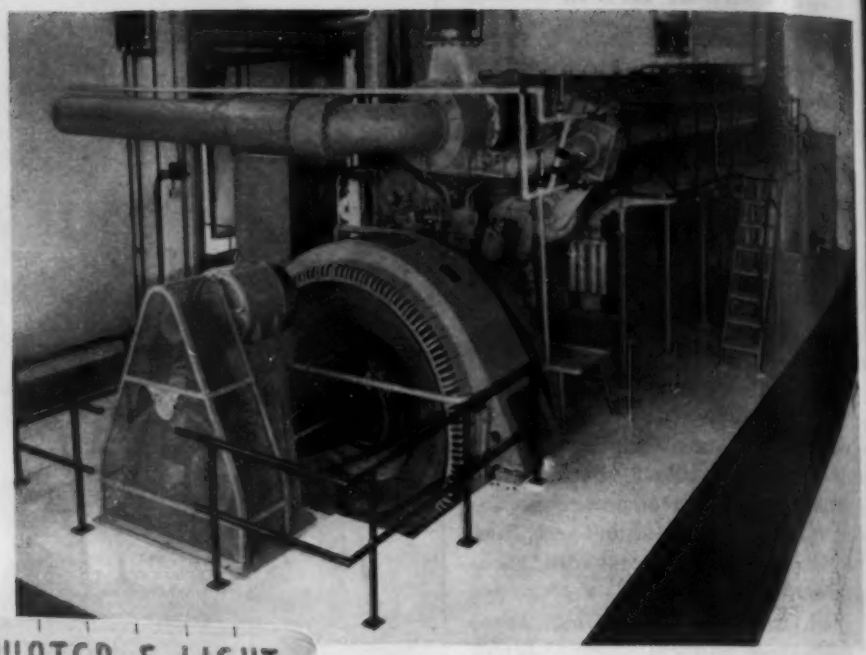


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Another Example of Efficient Power at Lower Cost





Above Latest addition to the Brady, Texas, plant — a 3,550 hp supercharged Cooper-Bessemer LSV-16 Gas-Diesel installed in August 1952

BRADY'S GREATEST PUBLIC BENEFACTOR

. . . a Cooper-Bessemer-powered municipal plant

TO say that the home-owned water and light plant at Brady, Texas, is a public benefactor is putting it mildly! Since 1942 this plant has advanced to this city of 7,000 more than $600,000 for civic improvements, *plus* service donations exceeding $200,000. It has helped keep taxes very low while defraying the costs of fire fighting equipment, police protection, street lighting, a new "whiteway" system, power for churches and schools at half cost, road improvements, 20 miles of new pavement and various recreation facilities including a swimming pool.

The Brady plant, like so many other efficient municipal plants, is powered with modern Cooper-Bessemer Gas-Diesels, assuring the highest thermal efficiencies known. Brady's latest is a big 3,550 hp supercharged unit installed in August last year. Because of its high efficiency it is kept in virtually 24-hour operation . . . 5205 hours through March 20, producing 7,325,000 kwh. The remainder of Brady's power is supplied by two older tandem-connected Cooper-Bessemers almost as efficient.

To make the most of your power plans for the future, be sure to check on the distinct advantages you stand to gain with modern Cooper-Bessemers.

MOUNT VERNON, OHIO
COOPER-BESSEMER
GROVE CITY, PENNA.

New York Washington, D.C Bradford, Pa. San Francisco Houston, Dallas, Greggton, Pampa and Odessa, Texas Seattle Shreveport St Louis Los Angeles Chicago Cooper-Bessemer of Canada, Ltd., Halifax, Nova Scotia Tulsa Gloucester, Mass. New Orleans, La.

DIESELS • GAS ENGINES • GAS-DIESELS • ENGINE-DRIVEN AND MOTOR-DRIVEN COMPRESSORS • HIGH PRESSURE LIQUID PUMPS

NEW EQUIPMENT

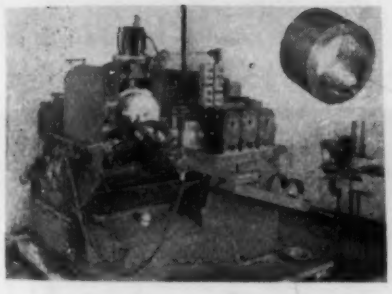
New and improved production ideas, equipment, services and methods described here offer production economies . . . for more data use the free postcard on page 127 or 128.



Lapping machine features semi-automatic feed

More pieces per hour are produced on a new single face, flat lapping machine as a result of the provisions for continual lapping and the complete lapping of the work in a single pass around the lap. Efficiency of bonded abrasive laps used make the single pass lapping possible. Cleaner work piece surfaces are also possible. Grit is washed away by a stream of filtered coolant on the lap. Lapping is interrupted only to true the bonded abrasive lap which is done by a diamond held in a variable speed, power operated truing arm. *Norton Co.*

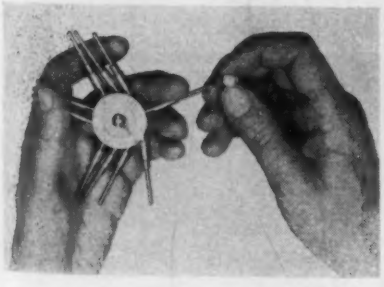
For more data circle No. 32 on postcard, p. 127.



Cold roll forming machine has coiler and cutoff

Cooling fins used on sealed refrigerator compressor units are produced on a new cold roll forming machine. Stock is taken from a coil approximately 1⅜ in. wide x 0.044 in. thick and production is 300 per hr of 5½ turn coils. Cutting stroke of the shear is activated by a single acting hydraulic cylinder and returned by spring action. A cyclomonitor controls the number of rings per coil and the cutoff is adjustable for coil diameter. *Kane & Roach, Inc.*

For more data circle No. 33 on postcard, p. 127.



Multiple gage increases output of bore grind

Utilizing the principle of a sphere as the measuring element, a new microsphere multiple precision gage consists of 10 measuring spheres in any increment desired, starting at 0.0001 in. The gage is used to make immediate check on the size of the hole being produced during any part of the operation. Simplicity of design and use makes it easy for anyone to use. Production is said to be increased four times over conventional methods and scrap is reduced to a minimum. *Anti-Friction Bearings Co.*

For more data circle No. 34 on postcard, p. 127.



Largest steel box added to NesTier line

The largest NesTier materials handling box No. 360 is 36 in. long x 14 in. high x 16½ in. wide and meets industry's demand for a materials handling box midway between a tote box and a heavy corrugated bin-type container. These all-welded 14-gage steel boxes tier in rigid stacks when filled, each unit resting securely on the upraised handles or bails of the box below. Contents remain fully visible and accessible. NesTier design assures easy separation, eliminates sticking or jamming. Suited for use where there is no need to manually lift a filled box. *Chas. Wm. Doepke Mfg. Co., Inc.*

For more data circle No. 35 on postcard, p. 127.

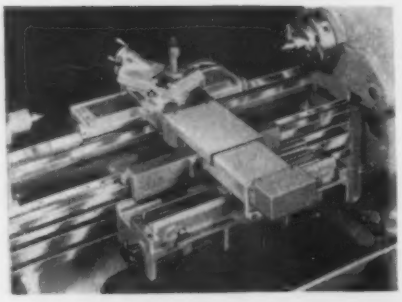
Turn Page



Air gage checks jet engine airfoil strip stock

Thickness, width and camber of jet engine airfoil strip stock can be gaged on a new air gage at the rate of 300 fpm. Two motor drive rolls are used to move the stock through the gage and a variable two-speed transmission controls the speed of the rolls. Movement of the stock may be stopped and reversed at any time. The gage is 33 in. wide x 31 in. deep and has a 12 column Precisionaire at eye-level height. Interchangeable and adjustable tooling is provided to permit checking 4 different widths of stock. Thickness is gaged at 5 places and width at one, with Plunjet gaging cartridges. The operator watches the positions of the floats in the columns to determine whether dimensions and conditions are in tolerance or how much they are out of tolerance. Minimum and maximum tolerance lines inscribed on a plastic plate facilitate determining at a glance whether the stock is in or out of tolerance. *Sheffield Corp.*

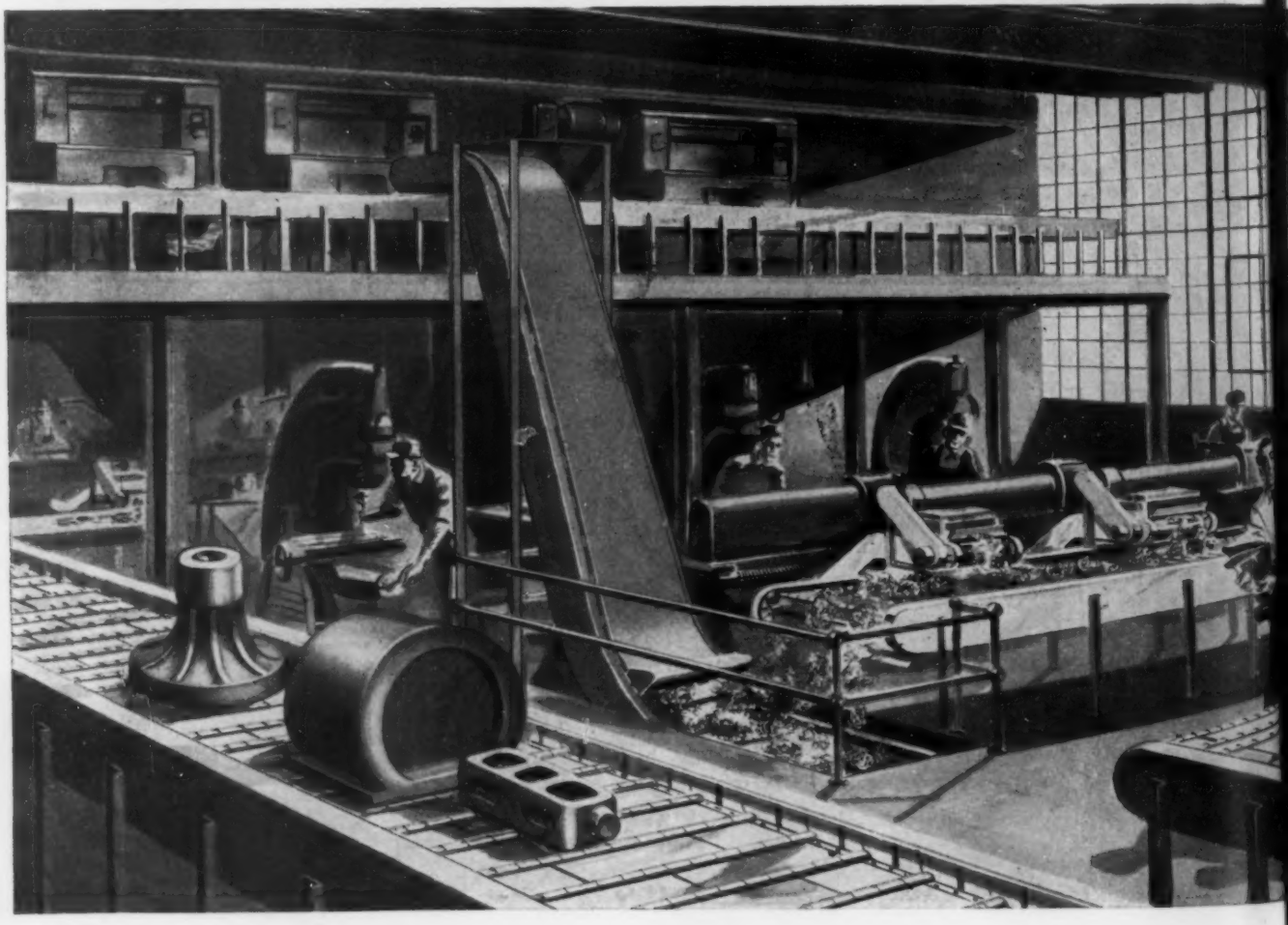
For more data circle No. 36 on postcard, p. 127.



Preloaded ball bearings featured in lathe unit

New lathe taper attachment for use on P&W Model C precision toolroom lathes permits taper cuts of 20° included angle and 15 in. long on the 12-in. lathe or 18 in. long on the 16-in. lathe. Preloaded balls riding on hardened and ground bearing surfaces completely eliminate longitudinal play while two of the four bearings in the taper bar shoe are mounted on eccentric studs, allowing adjustment and preventing transverse play. A straight cut between taper cuts is possible with one bar setting. *Pratt & Whitney.*

For more data circle No. 37 on postcard, p. 127.





Low lift pallet truck has 8 load wheels

A narrow aisle, rider-type electric low lift pallet truck with 8 load wheels arranged in dual, tandem fashion gives sufficient wheel bearing surface to substantially reduce both wheel and floor wear. Each wheel has a diameter of 3¼ in. and a face of 2¼ in. Wheels are articulated to insure contact with the floor at all times, even when traveling over rough and uneven surfaces. Wheel supporting levers are so arranged that the wheels lift almost vertically. The bottom of most pallets will be sufficient for this arrangement. *Raymond Corp.*

For more data circle No. 38 on postcard, p. 127.



Electronic scrubber cuts solvent costs 90 pct

New ultrasonic cleaner for processed parts operates with water-soluble detergents or cleaning solutions. The development operates by transmitting ultrasonic waves through the cleaning solutions which surrounds the parts to be cleaned, forcing the solution to cavitate, or "cold boil," with countless minute bubbles. These implode and literally blast particles of grease, grit and other foreign matter loose—reaching most inaccessible recesses of precision parts and cleaning metals, glass, rubber, plastics, ceramics, and other materials. The cleaner will be produced in diameters of 4, 7½ and 12 in., each with depth equal to its diameter. Separate cabinet houses the electrical generating and transmitting equipment. Savings of 90 pct in solvent costs and half the direct labor cost are claimed for this new method of industrial cleaning. *Bendix Aviation Corp.*

For more data circle No. 39 on postcard, p. 127.

Turn Page



MAY-FRAN gives you greater economies in handling scrap and heavy abrasive materials

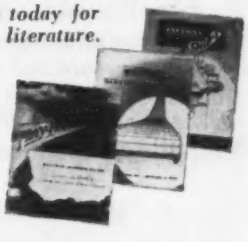
Whether you need a complete plant-wide system or a single scrap handling unit, MAY-FRAN can meet your requirements.

Two units form a complete MAY-FRAN materials handling assembly. The CHIP-TOTE automatic scrap conveyor removes borings, turnings and chips from high production machine tools while they are operating . . . thus eliminating shut-down time for manual scrap removal. Design features permit flexibility of installation according to type of machine tool, kind of metal scrap, rate of removal, etc.

The MAY-FRAN Hinged Steel Conveyor Belt transports scrap and heavy abrasive material to the disposal point. Precision formed, heavy gauge hinged-steel links are connected in horizontal rows by means of high-carbon steel rods. Side chains become an integral part of the belt, and outside links incorporate interlocking wings which remain positively engaged at all times. Link and rod construction eliminates fall-through.

For full utilization of vital machinery and skilled manpower, mechanize your handling of scrap and heavy abrasive materials with a MAY-FRAN automatic system.

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All these services mean more profits for you because they help lower your costs. Why not call your Kaiser Aluminum Distributor today?

Kaiser Aluminum

Your Kaiser Aluminum Distributor is listed at the right . . . See him . . . soon!

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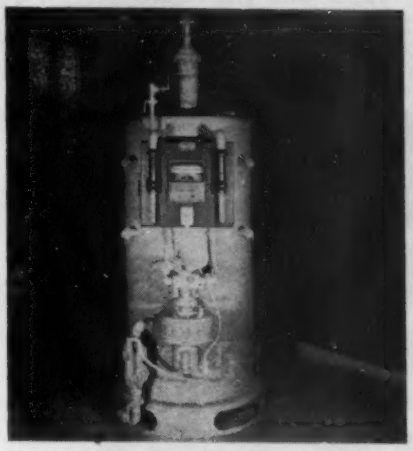
ATLANTA, Ga., Alpine 4885
Federated Steel Company
BALTIMORE, Md., Peabody 2-7300
Hill-Chase Steel Company of Maryland
Asheboro, N.C.: Phone 5200
Norfolk, Va.: Phone Beach 2601W
Richmond, Va.: Phone 7-4573
Roanoke, Va.: Phone 2-7740
Washington, D.C.: Phone Republic 7-7337
BEAUMONT, Tex., Phone 4-2641
Standard Brass & Mfg. Co.
BIRMINGHAM, Ala., Phone 9-2127
Hanna Steel Corporation
CHICAGO METROPOLITAN AREA
Kerhumel Steel & Aluminum Company
Evanston, Ill.: Ambassador 2-6700
Fullerton Steel & Wire Co., Merrimac 7-2700
CINCINNATI, Ohio, Wabash 4480, 4481
Morrison-Drabner Steel Co.
CLEVELAND, Ohio
Nottingham Steel Company, Atlantic 1-5100
Copper & Brass Sales, Inc., Endicott 1-6757
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Delta Metals, Inc., Logan 7443
Earle M. Jorgensen Co., Riverside 1761
DAVENPORT, Iowa, Phone 3-1895
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INDIANAPOLIS, Ind.
Hubbell Metals Inc., Hickory 9261
F. H. Langsenkamp Company, Imperial 4321
KANSAS CITY, Mo., Baltimore 7760
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Eureka Metals Supply Company, Mutual 7286
Earle M. Jorgensen Co., Lorain 7-1122
Reliance Steel Company, Adams 3-3193
MIAMI, Fla., Phone 65-4223
Robinson Bros., Inc.
MILWAUKEE, Wis., Evergreen 4-6000
Kerhumel Steel & Aluminum Corp.
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SAN FRANCISCO, Calif., Klondike 2-0511
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Merrill Aluminum Corporation

—New Equipment—

Continued

Endothermic gas

Simplicity of design and construction that combines ease of operation and maintenance with high operating efficiency economy are features of a new endothermic gas generator for controlled atmosphere furnaces, producing 1250 cfh output capacity. Atmospheric air and raw gas are drawn through flow meters, accurately proportioned and pumped into a catalytic cracking retort heated with multiple jet burners. As soon as completely cracked in the heating chamber, the gases are cooled by a water jacketed heat exchanger. This produces an endothermic gas of constant analysis, enabling closer control. Natural gas, butane, propane, and certain manufactured gases can be processed with the unit. *Ipsen Industries, Inc.*



For more data circle No. 40 on postcard, p. 127.

Scrap grapple

Efficient unloading, classifying and baling of bulky scrap is simplified using a new semi leaf model of the Esco three-leaf orange peel bucket. This rugged lifting device is capable of handling or crushing automobile bodies or tearing them apart. With fingers shaped and contoured for grasping awkward objects, the three-leaf design successfully handles all types of scrap such as rails, pipes, turnings and tin. The grapple is constructed of cast manganese steel for extra resistance to impact stresses and abrasive wear. The powerful three-point grip adjusts itself automatically to irregular surfaces of objects being lifted. *Electric Steel Foundry Co.*

For more data circle No. 41 on postcard, p. 127.

Turn Page

Hyde Park

RED CIRCLE Rolls ALLOY-CHILLED

Red Circle Rolls for all Purposes

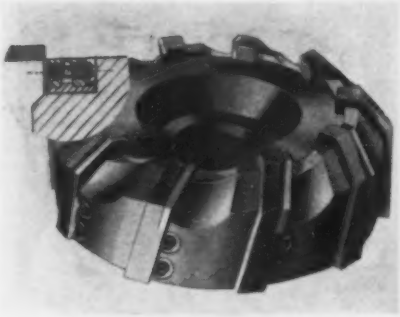
Hyde Park Red Circle Rolls are outstanding in quality and in performance and are easily identified by the Red Circle.



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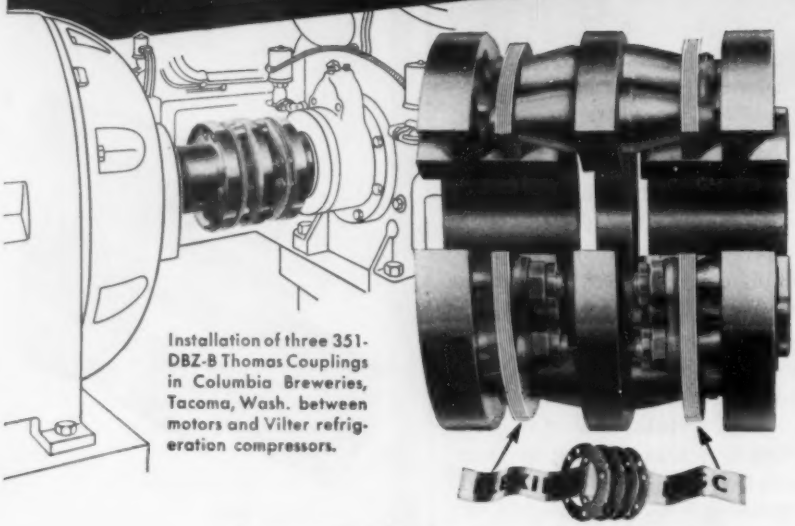


New face mill for large depths of cut

Extra heavy steel and cast iron roughing operations where large amounts of stock must be removed in one operation are possible with a new series of cutters. For maximum rigidity and strength, the extra thick cutter body is a 6145 steel forging with thicknesses from 3¼ to 3¾ in. Special 1½ in. high replaceable Wessonmetal carbide tipped blades, capable of ⅞ in. depth of cut are positively locked with Dual Wedg Locks. Combined with deep blade serrations, the Dual Wedg Locks enable rapid and accurate blade setup. Shape of brazed tip permits maximum regrinds. *Wesson Co.*

For more data circle No. 42 on postcard, p. 127.

THOMAS FLEXIBLE COUPLINGS...
for more years of better service!



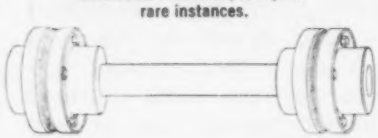
Installation of three 351-DBZ-B Thomas Couplings in Columbia Breweries, Tacoma, Wash. between motors and Vilter refrigeration compressors.

Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.

DISTINCTIVE ADVANTAGES	
FACTS	EXPLANATION
NO MAINTENANCE	Requires No Attention. Visual Inspection While Operating.
NO LUBRICATION	No Wearing Parts. Freedom from Shut-downs.
NO BACKLASH	No Loose Parts. All Parts Solidly Bolted.
CAN NOT "CREATE" THRUST	Free End Float under Load and Misalignment. No Rubbing Action to cause Axial Movement.
PERMANENT TORSIONAL CHARACTERISTICS	Drives Like a Solid Coupling. Elastic Constant Does Not Change. Original Balance is Maintained.



Thomas Couplings are made for a wide range of speeds, horsepower and shaft sizes and can be assembled or disassembled without disturbing the connected machines, except in rare instances.



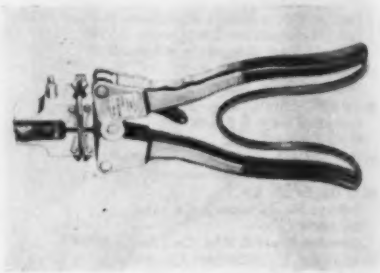
THOMAS

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THOMAS FLEXIBLE COUPLING COMPANY
Largest Exclusive Coupling Manufacturer in the World
WARREN, PENNSYLVANIA, U.S.A.

Tools buttweld wire

Koldweld Buttweld tools will buttweld different sizes of the same or dissimilar nonferrous metals together without the use of heat, electricity or chemicals. Tools are plier-action operated; weigh 5 lb; are 14 in. long. The KB-14B tool buttwelds aluminum and copper, and aluminum to copper wire. KB-14 will handle copper wire; aluminum and aluminum to copper wire. Latest development is tool that produces welds on copper and aluminum enamel insulated wire. This magnet wire requires no preparation. Koldweld tools can be operated by unskilled personnel. *Utica Drop Forge & Tool Corp.*



For more data circle No. 43 on postcard, p. 127.

Potassium cyanide

A new form of potassium cyanide is cylindrical in shape—about the size of a marshmallow—and weighs 1 oz. Cya-Nodes, as the new product is known, are formed by cast process, are dust free, sulfur free, and non-flaking. Costing no more than powdered cyanide, Cya-Nodes have a purity of 97.99 pct minimum, dissolve quickly, safe to handle. They are suitable for all electroplating processes. *Kyanide Div., Kraft Chemical Co.*

For more data circle No. 44 on postcard, p. 127.

Dial indicators

Precision built throughout to American Gage Design specifications, a new line of dial indicators offers 140 models in a choice of types, sizes and graduations to

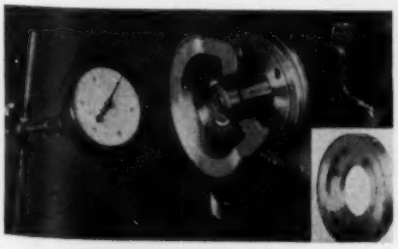


meet every quality control requirement. Outstanding features are simplified construction with new high efficiency, low friction design for greater accuracy, longer life, less maintenance. Regular and nonshock types are available with balanced or continuous dials, jeweled or plain (inserted bronze) bearings, English or metric graduations, in all four standard A.G.D. groups plus a complete series of long range models. *L. S. Starrett Co.*

For more data circle No. 45 on postcard, p. 127.

Truing diamond wheels

Easy-Tru Collar is a device for truing diamond wheels accurately and speedily. It eliminates paper shimming, extends diamond wheel



life by preventing uneven wear and saves manhours of truing time. Wheel is said to be trued to 0.0005 in. within minutes. *Queen City Carbide Tool Co.*

For more data circle No. 46 on postcard, p. 127.

Turn Page



What makes a paint brush bristle?

Mating the handle and bristles of a *good* paint brush is a difficult problem at best. But building a machine to do it automatically is an exercise in higher imagineering. We know, because a well-known paint manufacturer recently brought us this problem.

Taft-Peirce engineers helped to design and build several machines that do the job. Space the bristles in the handle, secure them, trim them, and finish them ready for shipment. The result — a *better, more uniform* product at *lower cost.*

This is just one of the hundreds of different machines and mechanisms conceived and built every year in the Taft-Peirce Contract Division. For a more complete picture of our facilities and experience, send for 92 page illustrated booklet, "Take It To Taft-Peirce."

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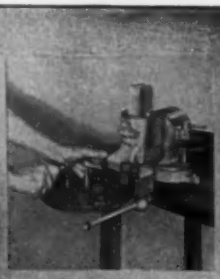
with

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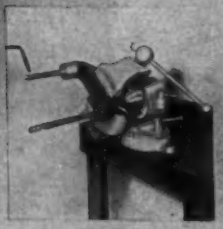
A revolutionary development that saves time, labor and fatigue. Provides complete rotation of 360° in any direction. Positions work to the operator, saving time, labor and physical fatigue. Flexivise is exactly what the name implies; a flexible vise providing a greater range and greater efficiency. 4" jaw width, 5½" jaw opening. Write or wire now for complete information.

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Special FlexiSleeve provides a vertical rotation.



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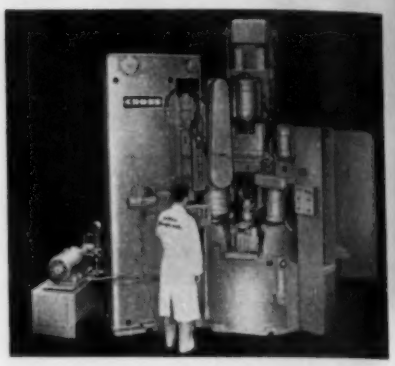
Large unwieldly pieces can be held securely by Flexivise.

—New Equipment—

Continued

Dial type machine

New dial type special machine tool bores, drills, reams and taps aluminum transmission shaft supports for a large automotive transmission producer. It turns the rear face, counterbores the large pilot diameter, drills six holes, drills and reams two locating holes, chamfers

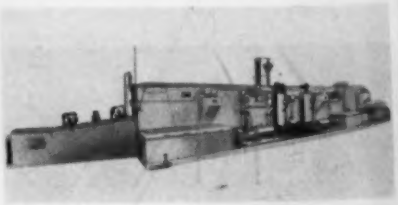


and taps five holes. Production is 128 castings per hour at 100 pct efficiency. Index table has six stations and is fluid motor driven. The machine provides for complete interchangeability of all standard and special parts to facilitate maintenance and reduce downtime. *Cross Co.*

For more data circle No. 47 on postcard, p. 127.

Three-stage washing

An automatic indexing fixture type industrial washing machine is claimed to clean 400 automatic transmission castings per hour. Pin-point washing action is achieved through precisely located high pressure nozzles which clean

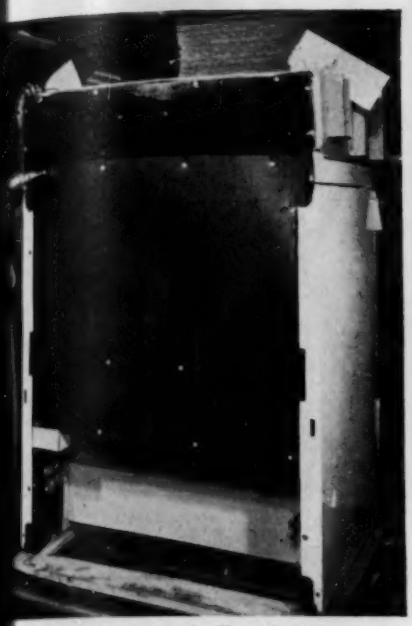


and flush each passage; blind, tapped hole and cavity externally and internally. Fixtures with brass pads hold the castings in exact, fixed position. Transfer mechanism is electrically sequenced, hydraulically powered. *International Conveyor & Washer Corp.*

For more data circle No. 48 on postcard, p. 127.

Turn Page

Users praise Phillips Cross-Recessed-Head Screws



TAPPAN RANGES are built to last for years. "Screws must remain tight over long periods of use," points out Paul N. Smith, Project Engineer. "I don't know of a single case where Phillips screws have failed us in this sense. We now use them exclusively. I can't say enough about their fastening qualities compared with the slotted type. Their greater contact area enables us to apply much greater torque without injury to employees." Ralph Stafford here fastens back panel.



FRONT PANEL OF A BRYANT MODEL 315 OIL FURNACE is assembled here by Ronald W. Eary. "All of our applications are metal-to-metal connections," states John Zonza, foreman of the General Assembly Department. "They must be set up extremely tight for rigid construction. With slotted screws, we had to use too much torque to secure a tight fit. This resulted in 'chewed' up heads, and damage to employees' hands. Phillips screws have eliminated this."



TRACY KITCHEN CABINETS use Phillips screws on their one movable part: the door hinge. "We have tested other type screws," says B. J. Krywick, general manager, "but decided on Phillips screws because they give us more ease of assembly, greater speed of assembly, more positive contact and driving power. They also eliminate slippage, give us less rejects and enable us to use production methods impossible with other type screws."

MANUFACTURERS OF PHILLIPS CROSS-RECESSED-HEAD SCREWS

THE FASTENERS OF TODAY... AND OF THE FUTURE

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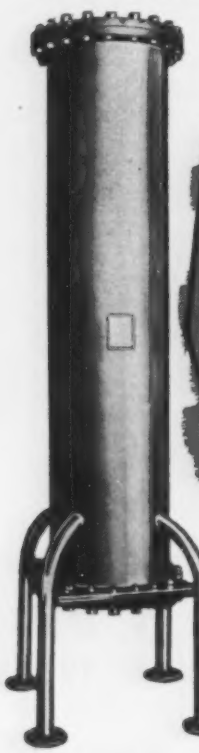
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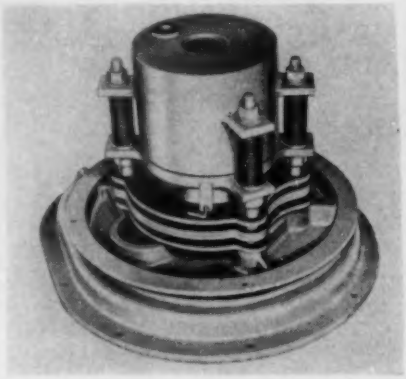
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—New Equipment—

Continued

DC rectifier brake

New dc rectifier brake for ac cranes and hoists has sturdy selenium rectifier with no moving parts, eliminates drawbacks of ac solenoids. Offered on the type R P&H Hevi-Lift hoist and Trav-Lift crane, this heavy-duty type rectifier brake provides direct ac-



tion with very short stroke. With low voltage (24v) operating coils having fewer turns, inductance is less and action is quicker. Setting and releasing of the brake are fast. The coil is sealed in pot with insulating type compound. Magnet pot and leads are stationary. *Harnischfeger Corp.*

For more data circle No. 49 on postcard, p. 127.

Glass handle holder

Molded glass fiber handle used on a new Caddy Cub electrode holder has high tensile strength and is impervious to moisture, arc radiation, and mechanical abuse. Longi-



tudinal grooves give a firm grip and resistance to twist, offer reduced hand contact area for cooler operation. The Caddy Cub operates continuous duty 1/16-3/16 electrodes and ¼ in. electrodes intermittently. *Erico Products, Inc.*

For more data circle No. 50 on postcard, p. 127.

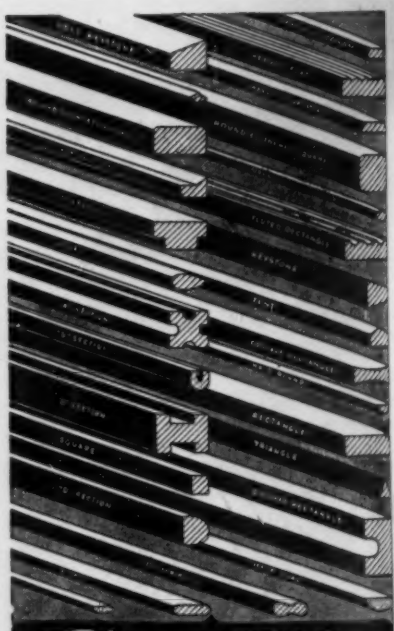
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AMERICAN BRIDGE safely handles difficult construction problem with minimum interruption in rail traffic

CONSTRUCTION of the new Mid-America Headquarters building of the Prudential Insurance Company, being built above 18 tracks of the Illinois Central Railroad located at Michigan Avenue and Randolph Street in Chicago, is now well under way. The big, 600-ft. skyscraper, which straddles eighteen railroad tracks, is moving upward according to schedule with little or no interruption of rail traffic.

Approximately 31,000 tons of steel will be used for the framework for this tall, modern structure—all of which is being fabricated and erected by American Bridge. It will take 125 American Bridge men about one year to erect the big steel columns, beams and girders for the towering structure.

When completed next year, the Prudential Building will rank among the world's most outstanding office buildings. And it will take its place alongside the Empire State Building, the Chrysler Building, the United Nations Headquarters, and other notable American Bridge structures from coast to coast.

PRUDENTIAL LIFE INSURANCE COMPANY BUILDING
Chicago, Illinois

Architect and Engineer:
Naess and Murphy, Chicago

General Contractor:
George A. Fuller Co., Chicago

Steel Fabricators:
American Bridge

Steel Erectors:
American Bridge

AMERICAN BRIDGE DIVISION, UNITED STATES STEEL CORPORATION
GENERAL OFFICES: 525 WILLIAM PENN PLACE, PITTSBURGH, PA.

Contracting Offices In: AMBRIDGE · ATLANTA · BALTIMORE · BIRMINGHAM · BOSTON · CHICAGO · CINCINNATI · CLEVELAND DALLAS · DENVER · DETROIT · ELMIRA · GARY · MEMPHIS · MINNEAPOLIS · NEW YORK · PHILADELPHIA · PITTSBURGH PORTLAND, ORE. · ROANOKE · ST. LOUIS · SAN FRANCISCO · TRENTON · UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

AMERICAN BRIDGE

UNITED STATES STEEL

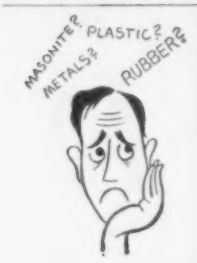


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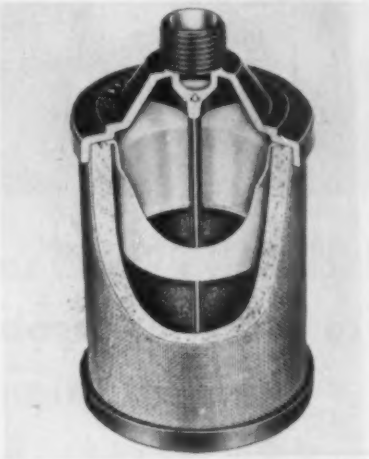
Roof valve

A roof unit for industrial buildings opens quickly when excess interior heat occurs and serves as an aid in fighting fire. Called a fire valve, it was developed for release of heat, gases and smoke in the event of fire. Each unit of the fire valve provides 46 sq ft of free area opening when two large dampers drop, released by a fusible link device. Dampers can also be opened and closed by a loop chain for use as extra ventilation in good weather. *Swartwout Co.*

For more data circle No. 51 on postcard, p. 127.

Exhaust muffler

Major source of noise caused by high velocity discharge from air actuated devices can be eliminated with a new air exhaust muffler. The unit operates on the opposed radial-flow silencing principle. Design characteristics do not restrict



full volume air flow maintaining absolute minimum back pressure. The Atomufflers are affixed directly to the exhaust aperture and will operate in any position, requiring no additional piping. Sizes range from ⅛ to 2 in. standard pipe size. *Allied Witan Co.*

For more data circle No. 52 on postcard, p. 127.

Small screw drivers

Screw drivers suitable for instrument work and fine watch work are available in 9 blade sizes. Blades are reversible and replacements may be purchased separately. A complete set of 9 or sets of 3 are offered. *Louis Levin & Son, Inc.*

For more data circle No. 53 on postcard, p. 127.

THE IRON AGE SUMMARY...

- Price increases coming on fabricated steel products
- Manufacturers of consumers' goods will absorb boost
- Ingot rate gains 5½ points; scrap eases 17¢ a ton

Price Reaction . . . The steel price increase will stick. Reaction of consumers is milder than some steel people had expected. Most manufacturers say that competitive conditions and sales resistance will force them to absorb the steel cost increases.

These are conclusions drawn from many interviews with steel users conducted by IRON AGE editors in major industrial centers across the nation.

More Coming . . . As expected, warehouse steel prices are being raised to reflect increases at mill level. A variety of fabricated steel products including fasteners and wire rope are expected to be increased in the near future.

There will likely be some selective increases in stainless steel prices following very intensive cost study now being conducted. Producers will move cautiously on stainless because of (1) competition within the industry, and (2) competition from other metals, chiefly aluminum.

In addition there will be price increases in seemingly unrelated products because of higher wage scales resulting from the "pattern" agreement in steel. Aluminum is likely to be among the first. Refractories may be another.

Higher steel costs and wage increases together will bring about a stiffening of price structures throughout the metalworking industries.

Competition . . . Most manufacturers of consumer goods such as autos and appliances say they will have to absorb part or all of the higher steel costs. The same is true of makers of industry products such as electrical machinery and machine tools. For many manufacturers the cost of following the new wage pattern will be much greater than the cost of absorbing the steel price increase.

Index . . . Average cost of the steel price increase will be $3.34 per net ton, as reflected by THE IRON AGE Finished Steel Base Price Composite. The price increases raised the index from 4.634¢ per lb to 4.801¢ per lb.

Production . . . Steelmaking operations this week are scheduled at 65.5 pct of rated capacity, up 5.5 points from the revised rate for the week of July 4. Summer lull will keep July production below the 70.3 pct of capacity average which the industry achieved during the second quarter. But a mild upturn in August is expected.

Scrap . . . THE IRON AGE Steel Scrap Price Composite eased 17¢ to $26.58.

Steel Output, Operating Rates

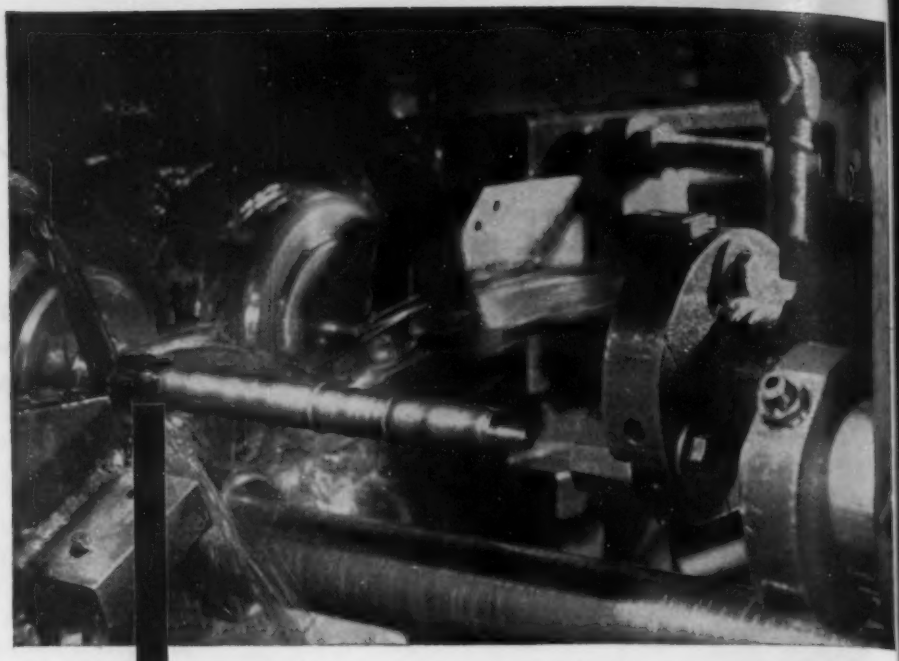
	This Week†	Last Week	Month Ago	Year Ago
Production				
(Net tons, 000 omitted)	1,559	1,430	1,725	2,134
Ingot Index				
1947—49=100)	97.1	89.0	107.4	132.8
Operating Rates				
Chicago	73.5	71.0*	84.0	97.0
Pittsburgh	64.0	60.0*	70.0	96.0
Philadelphia	56.0	53.0*	59.0	97.5
Valley	62.0	54.0*	69.0	97.0
West	81.0	73.0*	84.0	105.0
Detroit	68.0	50.0	95.0	107.0
Buffalo	59.0	61.0	67.5	106.5
Cleveland	64.0	61.0*	66.0	95.0
Birmingham	75.0	76.0	78.0	102.5
S. Ohio River	68.0	71.0	86.0	92.0
Wheeling	81.0	72.0*	92.0	100.0
St. Louis	53.0	55.0*	72.5	85.0
East	56.0	64.0*	60.5	41.0
Aggregate	65.5	60.0*	72.5	97.5

* Revised. † Tentative

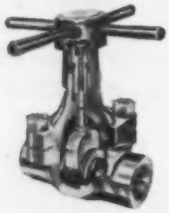
Prices At A Glance

(cents per lb unless otherwise noted)

	This Week	Week Ago	Month Ago	Year Ago
Composite prices				
Finished Steel, base	4.801	4.801	4.634	4.634
Pig Iron (gross ton)	$56.59	$56.59	$56.59	$56.76
Scrap, No. 1 hvy (gross ton)	$26.58	$26.75	$28.08	$44.83
Nonferrous				
Aluminum, ingot	21.50	21.50	21.50	20.50
Copper, electrolytic	30.00	30.00	30.00	29.875
Lead, St. Louis	13.80	13.80	13.80	13.30
Magnesium, ingot	27.75	27.75	27.75	27.00
Nickel, electrolytic	63.08	63.08	63.08	63.08
Tin, Straits, N. Y.	96.50	96.75	93.375	81.00
Zinc, E. St. Louis	11.00	11.00	11.00	11.00







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Valve stems are made of ENDURO Cold Drawn Types 410 and 416. And Edward methods engineers say they get good production for these reasons:

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Little Reaction to Price Increases

Consumers accept hikes as inevitable . . . Stainless may hold at present prices . . . Market steadying at depressed levels . . . August might show improvement.

Higher steel prices have brought little or no reaction from consumers. Producers report their customers are accepting the increases as inevitable to offset higher labor costs. Many of them will be faced with the same problem themselves in the near future.

Stainless steel consumers are getting a break for the time being. In fact, prices of stainless flat-rolled products may not rise for two reasons: (1) competition among producers, and (2) competition with aluminum.

Whether stainless prices rise at all will depend on how much aluminum producers increase prices after they settle new contract demands with the United Steelworkers. Negotiations between Alcoa and the USW began last week, and the company is expected to wind up with the same contract terms as those agreed to by the steel producers.

The market seems to be leveling off at depressed levels in most products. The change in demand from week-to-week is almost imperceptible.

Producers brighten up a little when new automotive models are mentioned. But they don't look for a pickup from this source until September, although August may show a slight improvement. One disturbing thought is that car makers may delay new model showings to give dealers a chance to clear out current stocks.

Purchasing Agent's Checklist

PRICES: Manufacturers expected to hold the line ..... p. 59

STEEL: Set New East Coast export price ..... p. 61

TANTALUM: High costs may stunt its growth ..... p. 63

ALUMINUM: Tax writeoffs up forge output ..... p. 65

NICKEL: Start first big U. S. smelter ..... p. 89

SHEET AND STRIP . . . **Detroit** reports most car makers are heavy on inventory, foreshadowing slow demand for July and August; demand from parts makers may pick up in late August but no improvement from car manufacturers is looked for until September. **Chicago** bookings for August are only fair, reflecting vacation shutdowns. **Pittsburgh** producers are confronted with a slow July, but August may bounce back.

BARS . . . **Cleveland** producers look for a pickup in order volume early in August, but the market there meanwhile is quiet; cold finished and alloy bars very slow. **Detroit** bar market is sick; many small consumers are practically down for the summer, and automakers and parts suppliers are overloaded. In **Chicago** August is shaping up as a slow month, but mill shipments for July are holding up well; vacation slump probably won't hit mills until August, although demand from warehouses and cold finishers is already slow. In the **East**, reinforcing bars are still soft pricewise but volume is good. Demand for hot-rolled and cold-finished is slow.

TUBULAR . . . Oil country market is still booming. In the **East**, demand for standard and galvanized pipe has improved, with delivery promises now up to 6 weeks compared with 4 weeks in June. Reports from other producing centers indicate a continuing competitive market in standard pipe.

STRUCTURALS AND PLATE . . . Phoenix Iron & Steel Co., already $7 below the market on structurals prior to the recent price increase by other producers is not advancing prices immediately. Other mills upped their prices $3 per ton, so Phoenix's advantage is now $10 per ton. Harrisburg Iron & Steel also is holding the line on plates, putting them $7.50 below the general market level including the $2.50 per ton advance by competing mills. Demand for wide flange structurals continues good, although there has been some slackening. Standard structurals are only fair and on short delivery. Higher price of structurals is not expected to increase number of reinforced concrete structurals, according to some sources. Best that can be said for the plate market is that it is dull.

WIRE . . . Reports from producing centers vary. **Cleveland** finds the market still healthy enough to force discontinuance of plant vacations, and staggered holiday schedules were followed to maintain production; merchant wire demand has slipped some but is still better than same time last year; demand for nails, manufacturers' bright wire is off seasonally. **Chicago** also reports a continuing good market with merchant grades very strong; manufacturers' wire slipped due to July slack. In the **East**, reinforcing mesh is riding along with the building boom; merchant wire has picked up; although better than last winter, industrial wire is slow; foreign competition in wire and nails is tending to keep prices soft. With the exception of construction products, which gave one mill one of the best Junes on record, **Pittsburgh** producers say demand for merchant and manufacturers' wire is running from fair to poor.

WAREHOUSE . . . **Pittsburgh** reports business is still not very good; no pickup is looked for until September; price-cutting in sheets and strip still a problem and likely to continue so; small outfits are buying mill rejects, reconditioning them and reselling at approximately mill price. A survey of Northern California warehouses reveals that business there is off about 17 pct from a year ago compared to 28 pct nationally, 50 pct in **Pittsburgh** and 40 pct in **Northern Ohio**. **Rocky Mountain** area showed increase of 4 pct.

June Shipments Trim Zinc Stocks

Smelter inventories dip almost 8800 tons as shipments rise 15,673 tons . . . Picture definitely brighter . . . Aluminum wage talks continue . . . Ask 10¢ "package"—By *R. L. Hatschek.*

Nonferrous markets, in general, are coasting along with little basic change. Copper seems to be tightening if anything and statistically zinc shows definite improvement with the first major reduction in smelter stocks in more than a year.

Labor talks are formally under way with Aluminum Co. of America, just at the organizing stage with others. Demands, according to reports up to presstime, are generally in line with the steel wage settlement as predicted. "Package" is estimated to cost about 10¢ per hour.

ZINC . . . Smelter stocks of slab zinc showed the first significant decline during June in more than a year. They still stand at a mountainous 201,055 tons, but the American Zinc Institute total for the previous month was 209,828 tons. On a daily average basis, production was about constant but, since June is a day shorter, total monthly output was down about 2000 tons to 71,466.

Big factor in trimming stocks was a 15,673-ton gain in shipments. Domestic shipments rose some 10,400 to 72,257 tons; export and drawback rose about 1600 tons to 2297 tons; and to government account rose approximately 3600 to 5685 tons. This brought total shipments to 80,239 tons. Only dim spot in the picture for June was a 5524-ton decline in unfilled orders to 33,100 tons.

LEAD . . . Generally poor market conditions are cited by International Smelting & Refining Co. which is closing its Tooele, Utah, lead-zinc reduction plant.

COPPER . . . Now that Chile has unloaded its 180,000-ton copper surplus and is finding no trouble in disposing of current production, that country's government has taken two steps to boost its income—boosted the price ⅛¢ and asked producers to go to a 7-day week.

The new 29.125¢ f.o.b. Chilean port copper price is equivalent to a U.S. price of 30.125¢. Outlook is for no immediate domestic price change, but the market is firming.

On the request for a full 7-day work week, neither Kennecott Copper Corp. nor Anaconda Copper Mining Co. has committed itself yet. Both prefer to wait out market developments.

ALUMINUM . . . In their first meeting with Aluminum Co. of America last week, the United Steel Workers is reported to have asked for a 5¢ wage boost, an additional 2¢ on social insurance and 3¢ more on pensions. This follows the steel "package" pretty closely. The union is also reported to have asked for something in the way of a guaranteed annual wage.

At presstime, talks were continuing.

Statistically, aluminum shipments in May were off slightly with the exception of a slight rise in rod and bar and a fairly decent boost in soft alloy extrusions.

MERCURY . . . Stockpilers will soon embark on a mercury-buying program, limiting the purchase price to not more than $225 per 76-lb flask. They'll buy domestic mercury until Dec. 31, 1957, or until they have 125,000 flasks, and Mexican mercury to the same date or until 75,000 flasks have been acquired. Individual foreign purchases, mainly from Canada, are also contemplated.

Both U.S. and Mexican production would have to be more than doubled to fill this stockpile goal. But since purchases from Italy and Spain would probably be reduced, the desired effect of cutting prices is quite likely to be realized.

MAGNESIUM . . . Indicating the rather poor state of magnesium foundry operations, total castings shipments for April were only 1034 tons as compared to 1203 in March. Declines were registered in all three categories, sand, permanent mold and die.

Shipments of wrought products, on the other hand, increased from 446 tons in April to 564 tons in May. This still doesn't compare with May, 1953, when 850 tons were shipped, but it's a definite improvement. Primary magnesium ingot production in May was also higher, totaling 6460 tons against 6203 tons in April.

ALUMINUM SHIPMENTS

(Net Tons)

	May	Apr.
Sheet & Plate, total	42,939	43,319
Non-Heat-Treatable	33,923	34,031
Heat-Treatable	9,016	9,288
Foil	5,281	5,699
Extruded products, total	11,642	*11,072
Soft Alloys	8,760	8,039
Hard Alloys	2,882	*3,033
Tube, Drawn, total	2,558	2,790
Soft Alloys	2,260	2,410
Hard Alloys	298	380
Rod & Bar, Rolled	6,135	6,115
ACSR & Cable, Bare	5,159	5,770
Wire, Other than Conductor	1,201	1,589
Forgings	1,660	*2,063
Castings, total	10,861	11,935
Sand	739	984
Permanent Mold	5,047	5,565
Die	5,075	5,386

* Revised

NONFERROUS METAL PRICES

(Cents per lb except as noted)

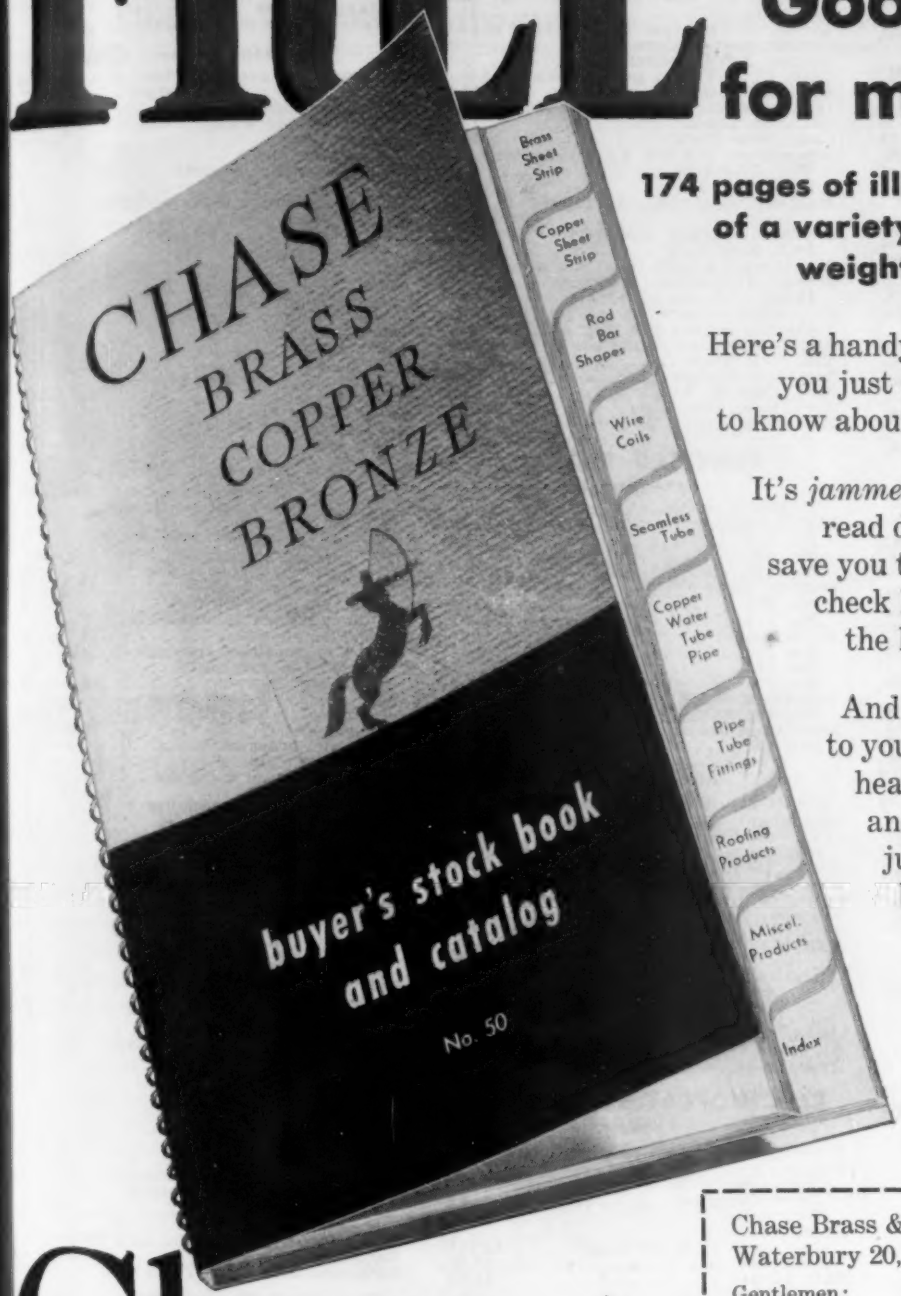
	July 7	July 8	July 9	July 10	July 12	July 13
Copper, electro, Conn.	30.00	30.00	30.00	30.00	30.00	30.00
Copper, Lake, delivered	30.00	30.00	30.00	30.00	30.00	30.00
Tin, Straits, New York	96.375	96.50	96.50	....	96.50	96.50*
Zinc, East St. Louis	11.00	11.00	11.00	11.00	11.00	11.00
Lead, St. Louis	13.80	13.80	13.80	13.80	13.80	13.80

Note: Quotations are going prices
*Tentative

FREE

Good reading for metal men!

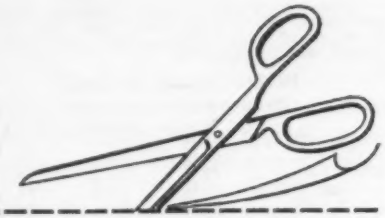
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Nonferrous Prices

(Effective July 13, 1954)

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)

Flat Sheet: 0.136 in. and thicker, 2S, 3S, 33.9¢; 4S, 36.0¢; 52S, 38.2¢; 24S-O, 24S-OAL, 37.0¢; 75S-O, 75S-OAL, 44.7¢; 0.081-in., 2S, 3S, 35.1¢; 4S, 37.7¢; 52S, 39.9¢; 24S-O, 24S-OAL, 38.4¢; 75S-O, 75S-OAL, 46.9¢; 0.032-in., 2S, 3S, 37.0¢; 4S, 41.8¢; 24S-O, 24S-OAL, 46.9¢; 75S-O, 75S-OAL, 58.4¢.

Plate, ¼-in., and Heavier: 2S-F, 3S-F, 32.4¢; 4S-F, 34.5¢; 52S-F, 36.2¢; 61S-O, 35.6¢; 24S-O, 24S-OAL, 36.9¢; 75S-O, 75S-OAL, 44.3¢.

Extruded Solid Shapes: Shape factors 1 to 5, 36.5¢ to 82.8¢; 12 to 14, 37.2¢ to 99.0¢; 24 to 26, 39.9¢ to $1.29; 36 to 38, 47.2¢ to $1.89.

Rod, Rolled: 1.064 to 4.5-in., 2S-F, 3S-F, 43.8¢ to 37.2¢; cold-finished, 0.375 to 3.449-in., 2S-F, 3S-F, 47.6¢ to 39.3¢.

Screw Machine Stock: Rounds, 11S-T3, ½ to 11/32-in., 69.6¢ to 47.0¢; ⅝ to 1½-in., 46.6¢ to 43.8¢; 1 9/16 to 3-in., 42.7¢ to 39.9¢. Base 5000 lb.

Drawn Wire: Coiled 0.051 to 0.374-in., 2S, 44.1¢ to 32.4¢; 52S, 53.4¢ to 39.1¢; 17S-T4, 60.1¢ to 41.8¢; 61S-T4, 53.9¢ to 41.3¢.

Extruded Tubing: Rounds, 63S-T5, OD 1¼ to 2-in., 31.6¢ to 60.7¢; 2 to 4 in., 37.7¢ to 51.1¢; 4 to 6 in., 38.2¢ to 46.6¢; 6 to 9 in., 38.7¢ to 48.8¢.

Roofing Sheet: Flat, per sheet, 0.032-in., 42¾ x 60 in., $2.838; x 96 in., $4.543; x 120 in., $5.680; x 144 in., $6.816. Coiled sheet, per lb, 0.019 in. x 28 in., 30.8¢.

Magnesium

(F.o.b. mill, freight allowed)

Sheet & Plate: FS1-O ¼ in., 56¢; 3/16 in., 57¢; ⅛ in., 60¢; 0.064 in., 73¢; 0.032 in., 94¢. Specification grade higher. Base 30,000 lb.

Extruded Round Rod: M, diam ¼ to 0.311 in., 77¢; ½ to ¾ in., 60.5¢; 1¼ to 1.749 in., 56¢; 2½ to 5 in., 51.5¢. Other alloys higher. Base up to ¾ in. diam, 10,000 lb; ¾ to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes: Rectangles: M. In weight per ft, for perimeters less than size indicated; 0.10 to 0.11 lb, 3.5 in., 65.3¢; 0.22 to 0.25 lb, 5.9 in., 62.3¢; 0.50 to 0.59 lb, 8.6 in., 59.7¢; 1.8 to 2.59 lb, 19.5 in., 56.8¢; 4 to 6 lb, 28 in., 52¢. Other alloys higher. Base, in weight per ft of shape: Up to ½ lb, 10,000 lb; ½ to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, 0.049 to 0.057 in. wall thickness: OD, ¼ to 5/16 in., $1.43; 5/16 to ⅝ in., $1.29; ½ to ⅞ in., 96¢; 1 to 2 in., 79¢; 0.165 to 0.219 in. wall; OD, ⅝ to ¾ in., 64¢; 1 to 2 in., 60¢; 3 to 4 in., 59¢. Other alloys higher. Base, OD: Up to 1½ in., 10,000 lb; 1½ to 3 in., 20,000 lb; over 3 in., 30,000 lb.

Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades; Sheets and strip, HR or CR, $15; Plate, HR, $12; Wire, rolled and/or drawn, $11; Bar, HR or forged, $6; Forgings, $6.

Nickel, Monel, Inconel

(Base prices, f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	86½	67½	92½
Strip, CR	92½	70½	98½
Rod, bar	82½	65½	88½
Angles, HR	82½	65½	88½
Plate, HR	84½	66½	90½
Seamless tube	115½	100½	137½
Shot, blocks	....	60	....

Copper, Brass, Bronze

(Freight included on 500 lb)

	Sheet	Rods	Extruded Shapes
Copper	46.41	....	48.48
Copper, h-r	48.38	44.73	....
Copper, drawn	....	45.98	....
Low brass	44.47	44.41	....
Yellow brass	41.72	41.66	....
Red brass	45.44	45.38	....
Naval brass	45.76	40.07	....
Leaded brass	....	....	39.11
Com. bronze	46.95	46.89	....
Mang. bronze	49.48	43.62	45.18
Phos. bronze	66.58	67.08	....
Muntz metal	43.96	39.77	41.02
Ni silver, 10 pct	55.36	....	62.63

Beryllium copper, CR, 1.9% Be, Base 2000 lb, f.o.b.

Strip	$1.68
Rod, bar, wire	1.65

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed	21.50
Aluminum pig	20.00
Antimony, American, Laredo, Tex.	28.50
Beryllium copper, per lb conta'd be.	$40.00
Beryllium aluminum 5% Be, Dollars per lb contained Be	$72.75
Bismuth, ton lots	$2.25
Cadmium, del'd	$1.70
Cobalt, 97-99% (per lb)	$2.60 to $2.67
Copper, electro, Conn. Valley	30.00
Copper, Lake, delivered	30.00
Gold, U. S. Treas., per troy oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$165 to $175
Lead, St. Louis	13.80
Lead, New York	14.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb, pig	27.00
ingot	27.75
Magnesium, sticks, 100 to 500 lb,	46.00 to 48.00
Mercury, dollars per 76-lb flask, f.o.b. New York	$280 to $285
Nickel electro, f.o.b. N. Y. warehouse	63.08
Nickel oxide sinter, at Copper Creek, Ont., contained nickel	56.25
Palladium, dollars per troy oz.	$31.00
Platinum, dollars per troy oz.	$84 to $87
Silver, New York, cents per troy oz.	85.25
Tin, New York	96.50
Titanium, sponge, grade A-1	$4.72
Zinc, East St. Louis	11.00
Zinc, New York	11.50
Zirconium copper, 50 pct	$6.20

REMELTED METALS

Brass Ingot

(Cents per lb delivered carloads)

85-5-5-5 ingot	
No. 115	27.00
No. 120	26.25
No. 123	25.75
80-10-10 ingot	
No. 305	31.50
No. 315	29.25
88-10-2 ingot	
No. 210	41.25
No. 215	37.75
No. 245	33.25
Yellow ingot	
No. 405	23.25
Manganese bronze	
No. 421	26.75

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys	
0.30 copper, max.	22.50-22.75
0.60 copper, max.	22.25-22.50
Piston alloys (No. 122 type)	20.00-21.25
No. 12 alum. (No. 2 grade)	19.25-19.75
108 alloy	19.75-20.25
195 alloy	21.00-21.50
13 alloy (0.60 copper max.)	22.25-22.50
ASX-679	19.75-20.25

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—96-97½%	20.00-20.50
Grade 2—92-95%	19.00-19.50
Grade 3—90-92%	18.00-18.50
Grade 4—85-90%	17.00-17.50

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 5000 lb lots)

Copper	
Cast, oval, 15 in. or longer	42.64
Electrodeposited	41.88
Flat rolled	45.04
Brass, 80-20	
Cast, oval, 15 in. or longer	43.515
Zinc, flat cast	20.25
Ball, anodes	18.50
Nickel, 99 pct plus	
Cast	84.00
Cadmium	$1.70
Silver 999 fine, rolled, 100 oz. lots per troy oz., f.o.b. Bridgeport, Conn.	94⅛

Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum	63.00
Copper sulfate, 99.5 crystals, bbl.	12.85
Nickel salts, single or double, 4-100 lb bags, frt. allowed	30.00
Nickel chloride, 375 lb drum	38.00
Silver cyanide, 100 oz. lots, per oz.	75½
Sodium cyanide, 96 pct domestic 200 lb drums	19.25
Zinc cyanide, 100 lb drum	54.30

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	26	25¼
Yellow brass	19¾	18
Red brass	23	22¼
Comm. bronze	22⅞	23½
Mang. bronze	18¼	17¼
Yellow brass rod ends	19½	....

Custom Smelters' Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	27 —27¼
No. 2 copper wire	25½—25¾
Light copper	24 —24¼
*Refinery brass	22¾—23

*Dry copper content.

Ingot Makers' Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	27 —27¼
No. 2 copper wire	25½—25¾
Light copper	24 —24¼
No. 1 composition	21½
No. 1 comp. turnings	20½
Rolled brass	17¾
Brass pipe	18½
Radiators	17¼—17½
Aluminum	
Mixed old cast	12 —12½
Mixed new clips	13 —13½
Mixed turnings, dry	12½—13
Pots and pans	12 —12½

Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	24½—25
No. 2 heavy copper and wire	23 —23½
Light copper	21 —21½
New type shell cuttings	20¼
Auto radiators (unsweated)	15
No. 1 composition	19 —19¼
No. 1 composition turnings	18½—19
Unlined red car boxes	16
Cocks and faucets	16 —16½
Mixed heavy yellow brass	13
Old rolled brass	15¼
Brass pipe	16½—17
New soft brass clippings	17½—18
Brass rod ends	15 —16
No. 1 brass rod turnings	14 —15

Aluminum

Alum. pistons and struts	7 — 8
Aluminum crankcases	10
2S aluminum clippings	13
Old sheet and utensils	10
Borings and turnings	6 — 7
Misc. cast aluminum	10
Dural clips (24S)	11

Zinc

New zinc clippings	6 — 6½
Old zinc	4¾— 5
Zinc routings	3 — 3½
Old die cast scrap	3 — 3¼

Nickel and Monel

Pure nickel clippings	60 —65
Clean nickel turnings	40
Nickel anodes	60 —65
Nickel rod ends	60 —65
New Monel clippings	23 —25
Clean Monel turnings	16 —18
Old sheet Monel	21 —23
Nickel silver clippings, mixed	15
Nickel silver turnings, mixed	13

Lead

Soft scrap lead	10½—11¼
Battery plates (dry)	5¾— 6
Batteries, acid free	4¼

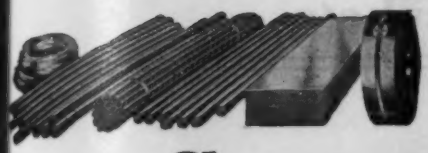
Magnesium

Segregated solids	18½—19
Castings	17½—18

Miscellaneous

Block tin	75 —80
No. 1 pewter	55 —60
No. 1 auto babbitt	45 —48
Mixed common babbitt	12½—13
Solder joints	16¾
Siphon tops	45
Small foundry type	15½
Monotype	14
Lino. and stereotype	13
Electrotype	11½
Hand picked type shells	8½
Lino. and stereo. dross	5½— 5½
Electro dross	3½— 4

(Advertisement)



BRIDGEPORT BRASS COMPANY

COPPER ALLOY BULLETIN

Bridgeport BRASS CO. MILLS IN BRIDGEPORT, CONN. AND INDIANAPOLIS, IND.—IN CANADA: NORANDA COPPER AND BRASS LIMITED, MONTREAL



Bridgeport Technical Handbook

To Help Our Customers on Metal Problems

Mass production of tiny but precise metal parts for electronic equipment calls for exacting specifications in brass and copper mill products. The Bridgeport "Technical Handbook" is designed as a ready-reference for product engineers and those responsible for purchasing and fabricating copper and copper-base alloys.

Bridgeport Brass Company recognizes the importance of supplying metal of uniform high-quality for automatic operations. Close cooperation between the fabricator and our technical service department will quickly help with materials to answer performance requirements, cut wasted time and prevent excessive spoilage.

Simplifies Alloy Selection

The Bridgeport "Technical Handbook" is divided into logical, easily read sections covering both general information and specific engineering data.

The first section discusses the numerous coppers and copper-base alloys, their compositions, physical and mechanical properties and their uses. It covers in non-technical language such subjects as the copper-zinc alloy system; the effects of additional elements such as lead, tin, aluminum, silicon, manganese, iron, nickel and arsenic on coppers; and the effects of annealing on physical properties. Temper or degree of hardness for sheet, rod, wire and tubing is explained. The causes and prevention of stress corrosion, cracking and hot breaks are discussed.

In addition, the "Technical Handbook" contains information on the importance of the microstructure of rolled and annealed brasses, graphically illustrated by micrographs and curves.

Mill Product Shapes

The following three sections are devoted to mill products—strip and sheet, rod and wire, and tubing. They are further broken down into groups such as Brass and Copper Strip for Drawing, Spinning and Stamping; Rods for Screw Machine Operation; Wire and Rod for Cold Heading; Rods for Hot Forging; Tubing for Fabrication; and many others.

Each classification lists not only the alloys and their applications, but gives a table of Composition, Mechanical Properties, Physical Constants, Fabrication Properties, as well as the latest specification numbers. By referring to these tables, the purchasing agent and the design engineer can see at a glance the alloys available and their comparative properties. This simplifies alloy selection, saves time and effort.

Hints on Metalworking

The handbook contains a brief but authoritative outline of procedures for working copper-base alloys. There are many diagrams and tables relating to machining, the tools to be used and recommended coolants. Data on Milling, reaming, chasing and sawing are given in concise tabular form with suggested procedures for the different alloys discussed. There are also full sections on drawing and drawing lubricants, annealing, cold heading, soldering, cleaning and dip coloring.

Useful Appendix

To complete the Handbook, almost thirty pages of informative tables are included as an Appendix. These tables cover equivalent weights, temperature conversions, metal melting points, length measurement conversions, and weights of flat products, circles, rod, round wire and copper tubes.

How to Get Your Copy

The Bridgeport "Technical Handbook" is a reliable guide to many problems and situations met by purchasing agents, design engineers and production superintendents in every-day work with copper-base alloys. Your copy will be quickly mailed upon request on company letterhead. And if you are confronted with metal problems not completely answered in the Handbook, do not hesitate to contact our nearest branch office for assistance as well as for your metal requirements. (1593)

Brighter Tone Enters Dull Market

Valley reports steel settlement and some buying have exerted bullish influences . . . Activity limited in major centers . . . Export trade firms East Coast prices.

Although a $1 drop in the high end of No. 1 steel in an extremely slow Chicago market brought THE IRON AGE Composite down 17¢ to $26.85, some price upturns in the Cleveland-Valley area brightened the scrap picture.

In Cleveland, peaceful settlement of steel negotiations plus some limited buying were the factors attributed to pushing openhearth grades up $2 all along the line.

Valley prices followed suit with a $2 increase in steelmaking grades.

Export buying in Philadelphia seems to have a steadying effect on that market. Report of a $1 increase in broker buying of openhearth grades to compete with export prices was received but prices to consumers remained unchanged.

Pittsburgh . . . Activity was limited to a token purchase of No. 2 heavy melting steel for a plant of a large consumer. Price paid was $27 per ton, but tonnage was not enough to affect the market price particularly since extra freight charges were involved. On the basis of latest railroad lists, No. 1 railroad rose $1 per ton contrary to the trend, and low phos moved up in sympathy and on basis of a sale last week. Blast furnace grades are unchanged. Cupola cast declined $1 on a sale.

Chicago . . . With mill operating rates affected for the second week by the regular July lull, scrap activity continued extremely slow. A handful of mill sales had the effect of pushing down the price on dealer grades slightly. There has been a growing tendency in the past week and a half to wait out the July slump in the hope of a firming market in early August. Sales continue in very limited tonnage. Mills continued to offer a premium for factory-fresh scrap over material moving out of dealer yards in heavy melting, but even this price moved down last week by $1 on a mill order. Electric furnace and turnings continue very poor. Cast, moving into the second week of the July vacation period, is becoming difficult to sell and is expected to continue dropping with the steel scrap market.

Philadelphia . . . Export business continues to be the major topic in the trade here as mills are generally buying token quantities at prevailing prices. One broker reports he has boosted buying prices $1 on No. 1 and No. 2 heavy melting and No. 1 bundles to compete with export prices. Cast grades show an easier tone, though larger foundries maintain their buying prices in prevailing ranges.

New York . . . Broker buying is becoming a bit more active with export prospects apparently firming. As a result, buying prices for No. 1 and No. 2 heavy melting steel are quoted $2 per ton higher. But the high side of the range is generally only for fairly substantial tonnage.

Detroit . . . Psychological factors rather than any strong mill support appear to be holding the Detroit market at its present level. The only sign of strength was the purchase of some industrial bundles at over $25, which was good enough to encourage the trade somewhat. Major consumers have been out of the market for so long that optimists believe they will have to make purchases before fall. A few are laying scrap down at present prices in hopes of strength later.

Cleveland . . . Peaceful settlement of steel negotiations and limited buying this week sent No. 1 heavy melting up $2 to $27 in Cleveland and $29 in Youngstown. Other openhearth grades advanced sympathetically as the price slide was finally reversed. Recent purchases have done a lot to dissipate bearish sentiment which had been snowballing in this area.

Birmingham . . . Mills quickly released shipments of scrap with the signing of the new steel wage contract, but there was little new buying of steel scrap. An Atlanta mill was in the market for No. 2 heavy melting at $21 delivered, a decrease of $1 from its last orders. Some cast scrap was moving, but there was no pressing demand and prices were unchanged.

St. Louis . . . A special lower tariff on borings and turnings from several southeastern points in effect Thursday, July 15, will bring new consumers here and strengthen the markets on these items. Stove plate is in larger supply and a sale of 400 tons was made at $5 below previous quotations. Cast iron brake shoes are dull and off $2 per ton.

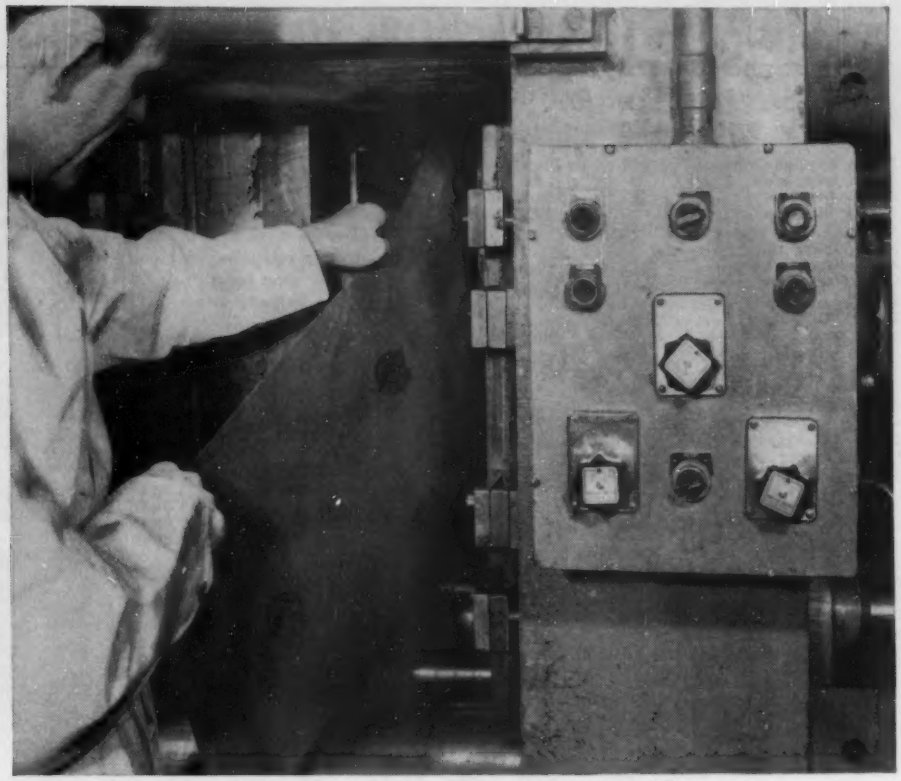
Cincinnati . . . Market here continued in the doldrums as local consumers kept furnaces idle. In the absence of local buying, market remained normal and slightly weaker than last week, according to most brokers and dealers.

Buffalo . . . A steady undertone rules quiet scrap market here. One of leading mills is maintaining a bid within prevailing ranges to support dealers' sentiment. On the other hand lower ingot rate is also a factor. Water receipts are virtually nil with 12 freighters which usually engage in scrap and ore cargoes now idle at local breakwall.

Boston . . . Market remained very inactive last week and a price decline in steelmaking scrap grades reflected the bearish sentiment. Some movement of No. 2 steel to Pittsburgh was reported late in the week. Price of unstripped motor blocks quoted $2 higher on appraisal last week remained unchanged.

West Coast . . . Steelmaking scrap showed a few signs of life last week with start-up of another openhearth in the San Francisco area, but no additional purchases. Cast continued to be hottest item, although price ceiling has about been reached.

no more costly, messy die-greasing!



How Federal Tool rustproofs a die in seconds. Ferro-Pak sheet inserted in die emits rust-inhibiting vapors from both sides.

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Keeping rust from expensive, highly-polished dies is a major problem for plastics molders. But coating dies with grease is a messy, time-consuming job nobody likes. Even after cleaning, machines often run an hour or more molding scrap just to clean out grease stuck in the dies.

Here's how Federal Tool Corporation of Chicago licked the problem. "Instead of grease, we use Cromwell Ferro-Pak rust inhibitor paper," says John L. Nolan, molding division manager. "In machine time and labor alone it saves us $200 a week."

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Other_____

Scrap Prices

(Effective July 13, 1954)

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$28.00 to	$29.00
No. 2 hvy. melting	25.00 to	26.00
No. 1 bundles	28.00 to	29.00
No. 2 bundles	23.00 to	24.00
Machine shop turn.	14.00 to	15.00
Mixed bor. and ms. turns.	14.00 to	15.00
Shoveling turnings	18.00 to	19.00
Cast iron borings	18.00 to	19.00
Low phos. punch'gs, plate	31.00 to	32.00
Heavy turnings	26.00 to	27.00
No. 1 RR. hvy. melting	31.00 to	32.00
Scrap rails, random lgth.	36.00 to	37.00
Rails 2 ft and under	42.00 to	43.00
RR. steel wheels	34.00 to	35.00
RR. spring steel	34.00 to	35.00
RR. couplers and knuckles	34.00 to	35.00
No. 1 machinery cast.	42.00 to	43.00
Cupola cast	34.00 to	35.00
Heavy breakable cast.	30.00 to	31.00

Chicago

No. 1 hvy. melting	$28.00 to	$29.00
No. 2 hvy. melting	25.00 to	27.00
No. 1 factory bundles	31.00 to	32.00
No. 1 dealers' bundles	28.00 to	29.00
No. 2 dealers' bundles	19.00 to	21.00
Machine shop turn.	12.00 to	13.00
Mixed bor. and turn.	12.00 to	13.00
Shoveling turnings	14.00 to	15.00
Cast iron borings	14.00 to	15.00
Low phos. forge crops	35.00 to	36.00
Low phos. punch'gs, plate	32.00 to	33.00
Low phos. 3 ft and under	31.00 to	32.00
No. 1 RR. hvy. melting	32.00 to	33.00
Scrap rails, random lgth.	36.00 to	37.00
Rerolling rails	42.00 to	43.00
Rails 2 ft and under	43.00 to	44.00
Locomotive tires, cut	33.00 to	34.00
Cut bolsters & side frames	35.00 to	36.00
Angles and splice bars	37.00 to	38.00
RR. steel car axles	40.00 to	41.00
RR. couplers and knuckles	35.00 to	36.00
No. 1 machinery cast.	39.00 to	40.00
Cupola cast	35.00 to	36.00
Heavy breakable cast.	28.00 to	29.00
Cast iron brake shoes	31.00 to	32.00
Cast iron car wheels	33.00 to	34.00
Malleable	40.00 to	41.00
Stove plate	32.00 to	33.00

Philadelphia Area

No. 1 hvy. melting	$22.00 to	$23.50
No. 2 hvy. melting	20.00 to	21.50
No. 1 bundles	23.00 to	24.00
No. 2 bundles	17.00 to	18.00
Machine shop turn.	12.00 to	13.00
Mixed bor. short turn.	14.00 to	15.00
Cast iron borings	14.00 to	15.00
Shoveling turnings	16.00 to	17.00
Clean cast chem. borings	20.00 to	21.00
Low phos. 5 ft and under	24.00 to	25.00
Low phos. 2 ft and under	25.00 to	26.00
Low phos. punch'gs	25.00 to	26.00
Elec. furnace bundles	23.00 to	24.00
Heavy turnings	21.00 to	22.00
RR. steel wheels	31.00 to	32.00
RR. spring steel	31.00 to	32.00
Rails 18 in. and under	41.00 to	42.00
Cupola cast	34.00 to	35.00
Heavy breakable cast.	35.00 to	36.00
Cast iron carwheels	38.00 to	39.00
Malleable	36.00 to	37.00
Unstripped motor blocks	27.00 to	28.00
No. 1 machinery cast.	39.00 to	40.00
Charging box cast.	36.00 to	37.00

Cleveland

No. 1 hvy. melting	$26.00 to	$27.00
No. 2 hvy. melting	24.00 to	25.00
No. 1 bundles	26.00 to	27.00
No. 2 bundles	22.00 to	23.00
No. 1 busheling	26.00 to	27.00
Machine shop turn.	12.00 to	13.00
Mixed bor. and turn.	16.00 to	17.00
Shoveling turnings	16.00 to	17.00
Cast iron borings	16.00 to	17.00
Cut struct'r'l & plate, 2 ft & under	31.50 to	32.50
Drop forge flashings	26.00 to	27.00
Low phos. 2 ft & under	28.00 to	29.00
No. 1 RR. heavy melting	27.00 to	28.00
Rails 3 ft and under	42.00 to	43.00
Rails 18 in. and under	43.00 to	44.00
Railroad grate bars	27.00 to	28.00
Steel axle turnings	19.00 to	20.00
Railroad cast	41.00 to	42.00
No. 1 machinery cast.	41.00 to	42.00
Stove plate	33.00 to	34.00
Malleable	39.00 to	40.00

Youngstown

No. 1 hvy. melting	$28.00 to	$29.00
No. 2 hvy. melting	23.00 to	24.00
No. 1 bundles	28.00 to	29.00
No. 2 bundles	21.00 to	22.00
Machine shop turn.	14.00 to	15.00
Shoveling turnings	19.00 to	20.00
Cast iron borings	19.00 to	20.00
Low phos. plate	30.00 to	31.00

Buffalo

No. 1 hvy. melting	$25.00 to	$26.00
No. 2 hvy. melting	21.00 to	22.00
No. 1 busheling	25.00 to	26.00
No. 1 bundles	25.00 to	26.00
No. 2 bundles	19.00 to	20.00
Machine shop turn.	14.50 to	15.50
Mixed bor. and turn.	17.50 to	18.50
Shoveling turnings	18.00 to	18.50
Cast iron borings	17.50 to	18.50
Low phos. plate	29.00 to	30.00
Scrap rails, random lgth.	33.00 to	34.00
Rails 2 ft and under	40.00 to	41.00
RR. steel wheels	34.00 to	35.00
RR. spring steel	34.00 to	35.00
RR. couplers and knuckles	34.00 to	35.00
No. 1 machinery cast.	41.00 to	42.00
No. 1 cupola cast.	37.00 to	38.00

Detroit

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$20.00 to	$21.00
No. 2 hvy. melting	17.00 to	18.00
No. 1 bundles, openhearth	22.00 to	23.00
No. 2 bundles	17.00 to	18.00
New busheling	20.00 to	21.00
Drop forge flashings	20.00 to	21.00
Machine shop turn.	7.00 to	8.00
Mixed bor. and turn.	9.00 to	10.00
Shoveling turnings	9.00 to	10.00
Cast iron borings	9.00 to	10.00
Low phos. punch's, plate	21.00 to	22.00
No. 1 cupola cast.	....	32.00
Heavy breakable cast.	....	23.00
Stove plate	....	28.00
Automotive cast.	....	36.00

St. Louis

No. 1 hvy. melting	$25.00 to	$26.00
No. 2 hvy. melting	23.50 to	24.50
No. 1 bundles	25.00 to	26.00
No. 2 bundles	19.50 to	20.50
Machine shop turn.	12.00 to	13.00
Cast iron borings	13.00 to	14.00
Shoveling turnings	13.00 to	14.00
No. 1 RR. hvy. melting	30.00 to	31.00
Rails, random lengths	38.00 to	39.00
Rails, 18 in. and under	43.00 to	44.00
Locomotive tires, uncut	31.00 to	32.00
Angles and splice bars	31.00 to	32.00
Std. steel car axles	40.00 to	41.00
RR. spring steel	31.50 to	33.50
Cupola cast	42.00 to	43.00
Hvy. breakable cast.	29.00 to	30.00
Cast iron brake shoes	28.00 to	29.00
Stove plate	32.00 to	33.00
Cast iron car wheels	30.00 to	31.00
Malleable	37.00 to	38.00
Unstripped motor blocks	29.00 to	30.00

New York

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$18.00 to	$19.00
No. 2 hvy. melting	15.00 to	16.00
No. 2 bundles	12.00 to	13.00
Machine shop turn.	5.00 to	6.00
Mixed bor. and turn.	7.00 to	8.00
Shoveling turnings	8.00 to	9.00
Clean cast chem. borings	14.00 to	15.00
No. 1 machinery cast.	35.00 to	36.00
Mixed yard cast.	29.00 to	30.00
Charging box cast.	29.00 to	30.00
Heavy breakable cast.	29.00 to	30.00
Unstripped motor blocks	22.00 to	23.00

Birmingham

No. 1 hvy. melting	....	$20.00
No. 2 hvy. melting	....	18.00
No. 1 bundles	....	20.00
No. 2 bundles	$15.00 to	16.00
No. 1 busheling	....	20.00
Machine shop turn.	15.00 to	16.00
Shoveling turnings	16.00 to	17.00
Cast iron borings	13.00 to	14.00
Electric furnace bundles	26.00 to	27.00
Bar crops and plate	29.00 to	30.00
Structural and plate, 2 ft	29.00 to	30.00
No. 1 RR. hvy. melting	26.00 to	27.00
Scrap rails, random lgth.	34.00 to	35.00
Rails, 18 in. and under	37.50 to	38.50
Angles & splice bars	36.00 to	37.00
Rerolling rails	39.00 to	40.00
No. 1 cupola cast.	43.50 to	44.50
Stove plate	40.50 to	41.50
Charging box cast.	19.00 to	20.00
Cast iron car wheels	33.00 to	34.00
Unstripped motor blocks	34.50 to	35.50
Mashed tin cans	15.00 to	16.00

Boston

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$15.00 to	$16.00
No. 2 hvy. melting	13.50 to	14.50
No. 1 bundles	15.00 to	16.00
No. 2 bundles	11.00 to	12.25
No. 1 busheling	15.00 to	16.00
Elec. furnace, 3 ft & under	....	17.00
Machine shop turn.	3.00 to	4.00
Mixed bor. and short turn.	6.00 to	7.00
Shoveling turnings	8.00 to	9.00
Clean cast chem. borings	9.00 to	10.00
No. 1 machinery cast.	27.00 to	28.00
Mixed cupola cast.	25.00 to	26.00
Heavy breakable cast.	23.50 to	24.00
Stove plate	24.00 to	25.00
Unstripped motor blocks	9.00 to	10.00

Cincinnati

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$26.00 to	$27.00
No. 2 hvy. melting	23.00 to	24.00
No. 1 bundles	26.00 to	27.00
No. 2 bundles	21.00 to	22.00
Machine shop turn.	11.00 to	12.00
Mixed bor. and turn.	13.50 to	14.50
Shoveling turnings	14.00 to	15.00
Cast iron borings	14.00 to	15.00
Low phos., 18 in. & under	32.00 to	33.00
Rails, random lengths	35.00 to	36.00
Rails, 18 in. and under	43.00 to	44.00
No. 1 cupola cast.	38.00 to	39.00
Hvy. breakable cast.	34.00 to	35.00
Drop broken cast.	43.00 to	44.00

San Francisco

No. 1 hvy. melting	....	$20.00
No. 2 hvy. melting	....	16.00
No. 1 bundles	....	19.00
No. 2 bundles	....	16.00
No. 3 bundles	....	12.00
Machine shop turn.	....	5.00
Cast iron borings	....	9.00
No. 1 RR. hvy. melting	....	23.00
No. 1 cupola cast.	$43.00 to	46.00

Los Angeles

No. 1 hvy. melting	....	$20.00
No. 2 hvy. melting	....	16.00
No. 1 bundles	....	19.00
No. 2 bundles	$15.50 to	16.00
No. 3 bundles	....	12.00
Machine shop turn.	....	5.00
Shoveling turnings	7.00 to	9.00
Cast iron borings	7.00 to	9.00
Elec. fur. 1 ft and under	....	25.00
No. 1 RR. hvy. melting	....	20.00
No. 1 cupola cast.	43.00 to	45.00

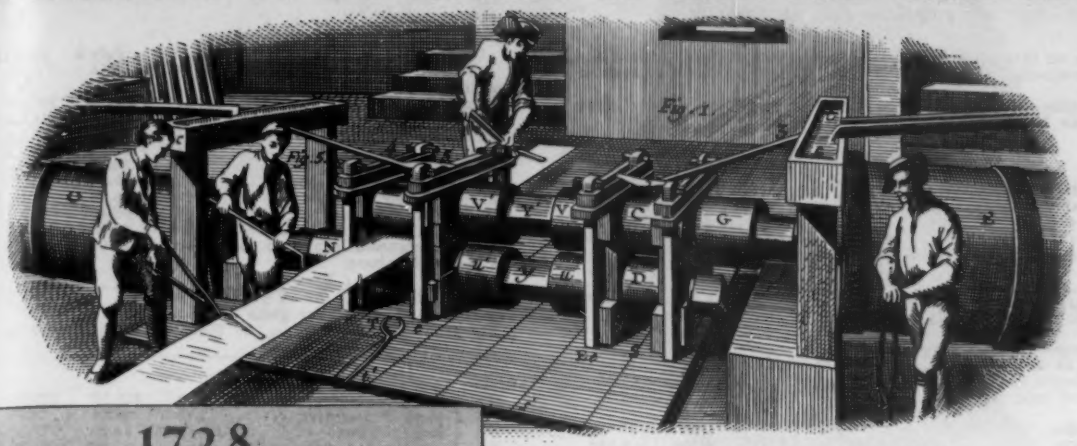
Seattle

No. 1 hvy. melting	....	$25.00
No. 2 hvy. melting	....	21.00
No. 1 bundles	....	21.50
No. 2 bundles	....	17.00
No. 3 bundles	....	13.00
No. 1 cupola cast.	....	37.00
Mixed yard cast.	....	35.00

Hamilton, Ont.

No. 1 hvy. melting	....	$22.00
No. 2 hvy. melting	....	19.00
No. 1 bundles	....	22.00
No. 2 bundles	....	19.00
Mixed steel scrap	....	16.00
Bushelings	....	17.00
Bush., new fact prep'd	....	20.00
Bush., new fact unprep'd	....	16.00
Short steel turnings	....	12.00
Mixed bor. and turn.	....	13.00
Rails, remelting	....	31.00
Cast scrap	$42.00 to	45.00

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When Major John Hanbury demonstrated the hot rolling of sheets on a two-high mill in Pontypool, England, in 1728, he introduced pack rolling to the steel industry.

Since then, obviously, some improvements have been made in the process, although the pack method as originally conceived by Major Hanbury has continued practically unchanged to the present day.

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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Comparison of Prices

(Effective July 13, 1954)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	July 13 1954	July 6 1954	June 15 1954	July 14 1953
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	4.05¢	4.05¢	3.925¢	3.925¢
Cold-rolled sheets	4.95	4.95	4.775	4.775
Galvanized sheets (10 ga.)	5.45	5.45	5.275	5.275
Hot-rolled strip	4.05	4.05	3.925	3.925
Cold-rolled strip	5.82	5.82*	5.513	5.575
Plate	4.237	4.237*	4.10	4.10
Plates wrought iron	9.30	9.30	9.30	9.00
Stainl's C-R strip (No. 302)	41.50	41.50	41.50	41.50
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$8.95	$8.95	$8.95	$8.95
Tinplate, electro (0.50 lb.)	7.65	7.65	7.65	7.65
Special coated mfg. ternes	7.75	7.75	7.75	7.75
Bars and Shapes. (per pound)				
Merchant bars	4.312¢	4.312¢*	4.16¢	4.15¢
Cold-finished bars	5.40	5.40	5.22	5.20
Alloy bars	5.075	5.075	4.875	4.875
Structural shapes	4.25	4.25	4.10	4.10
Stainless bars (No. 302)	35.50	35.50	35.50	35.50
Wrought iron bars	10.40	10.40	10.40	10.05
Wire: (per pound)				
Bright wire	5.75¢	5.75¢	5.525¢	5.525¢
Rails: (per 100 lb.)				
Heavy rails	$4.45	$4.45	$4.325	$4.325
Light rails	5.35	5.35	5.20	5.20
Semifinished Steel: (per net ton)				
Rerolling billets	$64.00	$64.00	$62.00	$62.00
Slabs, rerolling	64.00	64.00	62.00	62.00
Forging billets	78.00	78.00	75.50	75.50
Alloy blooms, billets, slabs	86.00	86.00	82.00	82.00
Wire Rod and Skelp: (per pound)				
Wire rods	4.675¢	4.675¢	4.525¢	4.525¢
Skelp	3.90	3.90	3.75	3.75
Finished Steel Composite: (per pound)				
Base price	4.801¢	4.801¢*	4.634¢	4.634¢

* Revised.

	July 13 1954	July 6 1954	June 15 1954	July 14 1953
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$61.19	$61.19	$61.19	$62.19
Foundry, Valley	56.50	56.50	56.50	56.50
Foundry, Southern, Cin'ti	60.43	60.43	60.43	60.43
Foundry, Birmingham	52.88	52.88	52.88	52.88
Foundry, Chicago	56.50	56.50	56.50	56.50
Basic del'd. Philadelphia	60.27	60.27	60.27	61.27
Basic, Valley furnace	56.00	56.00	56.00	56.00
Malleable, Chicago	56.50	56.50	56.50	56.50
Malleable, Valley	56.50	56.50	56.50	56.50
Ferromanganese‡, cents per lb.	10.00¢	10.00¢	10.00¢	10.00¢

‡ 76 pct Mn base.

Pig Iron Composite: (per gross ton)				
Pig iron	$56.59	$56.59	$56.59	$56.76
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$28.50	$28.50	$29.50	$47.50
No. 1 steel, Phila. area	22.75	22.75	22.75	43.50
No. 1 steel, Chicago	28.50	29.00	32.00	43.50
No. 1 bundles, Detroit	22.50	22.50	26.00	38.50
Low phos., Youngstown	30.50	29.50	31.50	48.50
No. 1 mach'y cast, Pittsburgh	42.50	42.50	43.50	49.50
No. 1 mach'y cast, Philadel'a	39.50	39.50	39.50	45.50
No. 1 mach'y cast, Chicago	39.50	39.50	41.00	45.50
Steel Scrap Composite: (per gross ton)				
No. 1 heavy melting scrap	$26.58	$26.75	$28.08	$44.83
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.38	$14.38	$14.38	$14.75
Foundry coke, prompt	16.75	16.75	16.75	17.25
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	30.00	30.00	30.00	29.875‡
Copper, Lake, Conn.	30.00	30.00	30.00	30.125
Tin, Straits, New York	96.50†	96.75*	93.375	81.00
Zinc, East St. Louis	11.00	11.00	11.00	11.00
Lead, St. Louis	13.80	13.80	13.80	13.80
Aluminum, virgin ingot	21.50	21.50	21.50	20.50
Nickel, electrolytic	63.08	63.08	63.08	63.08
Magnesium, ingot	27.75	27.75	27.75	27.00
Antimony, Laredo, Tex.	28.50	28.50	28.50	34.50

† Tentative. ‡ Average. * Revised.

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

← To identify producers, see Key on p. 169 →

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Bethlehem *B3*	58.00	58.50	59.00	59.50	.....
Birmingham *R3*	52.38	52.88	.....	.....	.....
Birmingham *W9*	52.38	52.88	.....	.....	.....
Birmingham *U4*	52.38	52.88	56.50	.....	.....
Buffalo *R3*	56.00	56.50	57.00	.....	.....
Buffalo *H1*	56.00	56.50	57.00	.....	.....
Buffalo *W6*	56.00	56.50	57.00	.....	.....
Chicago *I4*	56.00	56.50	56.50	57.00	.....
Cleveland *A5*	56.00	56.50	56.50	57.00	61.00
Cleveland *R3*	56.00	56.50	56.50	.....	.....
Daingerfield *L3*	52.50	52.50	52.50	.....	.....
Duluth *I4*	56.00	56.50	56.50	57.00	.....
Erie *I4*	56.00	56.50	56.50	57.00	.....
Everett *M6*	.....	61.00	61.50	.....	.....
Fontana *K1*	62.00	62.50	.....	.....	.....
Geneva, Utah *C7*	56.00	56.50	.....	.....	.....
Granite City *G2*	57.90	58.40	58.90	.....	.....
Hubbard *Y1*	.....	.....	56.50	.....	.....
Minnequa *C6*	58.00	59.00	59.00	.....	.....
Monessen *P6*	56.00	.....	56.50	.....	.....
Neville Isl. *P4*	56.00	56.50	56.50	.....	.....
Pittsburgh *U1*	56.00	.....	.....	57.00	.....
Sharpsville *S3*	56.00	56.50	56.50	57.00	.....
Steelton *B3*	58.00	58.50	59.00	59.50	64.00
Swedeland *A2*	58.00	58.50	59.00	59.50	.....
Toledo *I4*	56.00	56.50	56.50	57.00	.....
Troy, N. Y. *R3*	58.00	58.50	59.00	59.50	64.00
Youngstown *Y1*	.....	.....	56.50	57.00	.....
N. Tonawanda *T1*	.....	56.50	57.00	.....	.....

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.50 pct manganese over 1 pct., $2 per ton for .05 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus, content 0.70 and over.

Silvery Iron: Buffalo, *H1*, $68.25; Jackson, *J1*, *G1*, $67.00. Add $1.50 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. Add $1 per ton for 0.75 pct. or more phosphorus. Add 75¢ for each 0.50 pct. manganese over 1.0 pct. Bessemer ferrosilicon prices are $1 over comparable silvery iron.

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	301	302	303	304	316	321	347	410	416	430
Ingots, rerolling	16.25	17.25	18.75	18.25	28.00	22.75	24.50	14.00	.....	14.25
Slabs, billets, rerolling	20.50	22.75	24.75	23.75	36.25	29.50	32.25	18.25	.....	18.50
Forg. discs, die blocks, rings	38.50	38.50	41.50	40.50	60.00	45.50	50.75	31.00	31.75	31.75
Billets, forging	29.50	29.75	32.25	31.00	46.50	35.25	39.50	24.00	24.50	24.50
Bars, wires, structurals	35.25	35.50	38.25	37.25	55.50	42.00	46.75	28.75	29.25	29.25
Plates	37.25	37.50	39.75	39.75	58.75	45.75	51.25	30.00	30.50	30.50
Sheets	41.25	41.50	48.75	43.75	62.75	50.50	59.25	34.25	41.25	34.75
Strip, hot-rolled	29.75	32.00	36.75	34.25	53.25	41.00	46.50	26.25	.....	27.00
Strip, cold-rolled	38.25	41.50	45.50	43.75	62.75-63.00	50.50-50.75	59.25	34.25	41.25	34.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* McKeesport, Pa., *U1;* Washington, Pa., *W2, J2;* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R3;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2;* Ft. Wayne, *J4.*

Strip: Midland, Pa., *C11;* Cleveland, *A5;* Carnegie, Pa., *S9;* McKeesport, Pa., *F1;* Reading, Pa., *C2;* Washington, Pa., *W2;* W. Leechburg, Pa., *A3;* Bridgeville, Pa., *U2;* Detroit, *M2;* Canton-Massillon, O., *R3;* Middletown, O., *A7;* Harrison, N. J., *D3;* Youngstown, *C5;* Sharon, Pa., *S1;* Butler, Pa., *A7;* Wallingford, Conn., *U3* (.25¢ per lb higher) *W1* (.25¢ per lb higher); New Bedford, Mass., *R6.*

Bar: Baltimore, *A7;* Duquesne, Pa., *U1;* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa., *J2;* McKeesport, Pa., *U1, F1;* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A3;* Massillon, O., *R3;* Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A3;* Waukegan, *A5;* Canton, O., *T5;* Ft. Wayne, *I4.*

Wire: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Harrison, N. J. *D3;* Baltimore, *A7;* Dunkirk, *A3;* Monessen, *P1;* Syracuse, *C11;* Bridgeville, *U2.*

Structurals: Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11.*

Plates: Brackenridge, Pa., *A3;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R3;* Coatesville, Pa., *C15.*

Forged discs, die blocks, rings: Pittsburgh, *C11;* Syracuse, *C11;* Ferndale, Mich. *A3;* Washington, Pa., *J2.*

Forging billets: Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R3;* Watervliet, *A3;* Pittsburgh, Chicago, *U1;* Syracuse, *C11.*

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IRON AGE

STEEL PRICES

(Effective July 13, 1954)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PILING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$86.00 *B3*		4.30 *B3*	6.45 *B3*	4.30 *B3*						
	Buffalo, N. Y.	$64.00 *B3*	$78.00 *B3, R3*	$86.00 *B3, R3*	5.075 *B3*	4.30 *B3*	6.45 *B3*	4.30 *B3*	4.05 *B3,R3*	5.75 *B3*	6.15 *B3*	8.425 *B3*		
	Claymont, Del.													
	Coatesville, Pa.													
	Conshohocken, Pa.								4.175 *A2*		6.10 *A2*			
	New Bedford, Mass.													
	Harrison, N. J.													
	Johnstown, Pa.	$64.00 *B3*	$78.00 *B3*	$86.00 *B3*		4.30 *B3*	6.45 *B3*		4.05 *B3*					
	Fairless, Pa.													
	New Haven, Conn.									6.20 *D1* 6.50 *A5*				
	Phoenixville, Pa.					3.80 *P2*		3.80 *P2*						
	Sparrows Pt., Md.								4.05 *B3*	5.75 *B3*	6.15 *B3*	8.425 *B3*		
	Wallingford, Conn.									6.20 *W1*				
	Worcester, Mass.									6.60 *A5*				12.75 *A5*
MIDDLE WEST	Alton, Ill.													
	Ashland, Ky.								4.05 *A7*					
	Canton-Massillon, Dover, Ohio			$82.00 *T5* $86.00 *R3*										12.45 *G9*
	Chicago, Ill.	$64.00 *U1*	$78.00 *R3, U1,W8*	$86.00 *U1, W8,R3*	5.075 *U1*	4.25 *U1, W8*	6.40 *U1, Y1*	4.25 *U1*	4.05 *A1, W8*	5.85 *A1*				
	Cleveland, Ohio		$78.00 *R3*							5.75 *A5,J3*		8.60 *A5*		12.45 *A5*
	Detroit, Mich.			$88.00 *R5*					4.20 *G3,M2*	5.90 *D1,D2, G3,M2,P11*	6.30 *G3*	8.35 *D2* 8.75 *G3*		
	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana	$64.00 *U1*	$78.00 *U1*	$86.00 *U1, Y1*	5.075 *I3*	4.25 *I3, U1*	6.40 *U1, I3*		4.05 *I3, U1,Y1*	6.00 *I3*	6.15 *U1, I3, Y1*		6.70 *U1*	
	Granite City, Ill.													
	Indianapolis, Ind.									5.90 *C5*				
	Newport, Ky.												6.70 *N5*	
	Middletown, Ohio									5.75 *A7*				
	Niles, Warren, Ohio Sharon, Pa.								4.05 *S1,R3*	5.75 *S1,R3, T4*	6.15 *S1, R3*	8.60 *S1*	6.70 *S1*	12.45 *S1*
	Pittsburgh, Pa. Midland, Pa. Butler, Pa.	$64.00 *U1, J3*	$78.00 *J3, U1*	$86.00 *U1*	5.075 *U1*	4.25 *J3, U1*	6.40 *J3, U1*	4.25 *U1*	4.05 *S7,P6*	5.75 *B4,J3, S7*				
	Portsmouth, Ohio								4.05 *P7*	5.75 *P7*				
	Weirton, Wheeling, Follansbee, W. Va.					4.25 *W3*			4.05 *W3*	5.75 *F3, W3*	6.15 *W3*	8.60 *W3*		
	Youngstown, Ohio			$86.00 *Y1*		4.25 *Y1*	6.40 *Y1*		4.05 *U1,Y1*	5.75 *Y1, C5*	6.15 *U1, Y1*	8.60 *Y1*	6.70 *U1*	12.45 *U1*
WEST	Fontana, Cal.	$72.00 *K1*	$86.00 *K1*	$105.00 *K1*		4.90 *K1*	7.05 *K1*	5.25 *K1*	4.825 *K1*	7.65 *K1*	7.25 *K1*		8.10 *K1*	14.55 *K1*
	Geneva, Utah		$78.00 *C7*			4.25 *C7*	6.40 *C7*							
	Kansas City, Mo.					4.85 *S2*	7.00 *S2*		4.65 *S2*				7.30 *S2*	
	Los Angeles, Torrance, Cal.		$87.50 *B2*	$106.00 *B2*		4.95 *B2, C7*	7.10 *B2*		4.80 *B2,C7*					
	Minnequa, Colo.					4.70 *C6*			5.15 *C6*					
	San Francisco, Niles, Pittsburg, Cal.		$87.50 *B2*			4.90 *B2* 4.95 *P9*	7.05 *B2*		4.80 *B2,C7*					
	Seattle, Wash.		$91.50 *B2*			5.00 *B2*	7.15 *B2*		5.05 *B2, P12*					
SOUTH	Atlanta, Ga.								4.25 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$64.00 *T2*	$78.00 *T2*			4.25 *T2* 4.28 *R3*	6.40 *T2*		4.05 *R3, T2*		6.15 *T2*			
	Houston, Tex.		$85.00 *S2*	$93.00 *S2*		4.65 *S2*	6.85 *S2*		4.45 *S2*				7.10 *S2*	

IRON AGE

STEEL PRICES

(Effective July 13, 1954)

Italics identify producers listed in key at end of table. Base prices, f.o.b., mill in cents per lb., unless otherwise noted. Extras apply.

		SHEETS									WIRE ROD	TINPLATE†		BLACK PLATE
		Hot-rolled *18* ga. & hvyr.	Cold-rolled	Galvanized *10* ga.	Enameling *12* ga.	Long Terne *10* ga.	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot-rolled *19* ga.		Cokes* *1.25*-lb. base box	Electro* *0.25*-lb. base box	Holloware Enameling *29* ga.
EAST	Bethlehem, Pa.													
	Buffalo, N. Y.	4.05 *B3*	4.95 *B3*				6.10 *B3*	7.50 *B3*			4.675 *W6*			
	Claymont, Del.											† Special coated mfg. terne deduct 95¢ from 1.25-lb coke base box price. Can-making quality blackplate 55 to 128 lb deduct $2.20 from 1.25-lb coke base box. * COKES: 1.50 lb add 25¢. ELECTRO: 0.50-lb add 25¢; 0.75-lb add 65¢; 1.00-lb add $1.20.		
	Coatesville, Pa.													
	Conshohocken, Pa.	4.10 *A2*					6.10 *A2*							
	Harrisburg, Pa.													
	Hartford, Conn.													
	Johnstown, Pa.										4.675 *B3*			
	Fairless, Pa.	4.10 *U1*	5.00 *U1*				6.15 *U1*	7.55 *U1*				$8.80 *U1*	$7.50 *U1*	
	New Haven, Conn.													
	Phoenixville, Pa.													
	Sparrows Pt., Md.	4.05 *B3*	4.95 *B3*	5.45 *B3*			6.10 *B3*	7.50 *B3*	8.20 *B3*		4.775 *B3*	$8.80 *B3*	$7.50 *B3*	
	Worcester, Mass.										4.975 *A5*			
	Trenton, N. J.													
MIDDLE WEST	Alton, Ill.													
	Ashland, Ky.	4.05 *A7*		5.45 *A7*	5.375 *A7*									
	Canton-Massillon, Dover, Ohio			5.45 *R1,R3*						5.175 *R1*				
	Chicago, Joliet, Ill.	4.05 *A1, W8*					6.10 *U1*				4.675 *A5, N4,R3*			
	Sterling, Ill.										4.775 *N4*			
	Cleveland, Ohio	4.05 *J3, R3*	4.95 *J3, R3*		5.375 *R3*		6.10 *J3, R3*	7.50 *J3, R3*			4.675 *A5*			
	Detroit, Mich.	4.20 *G3, M2*	5.10 *G3*				6.25 *G3*	7.65 *G3*						
	Newport, Ky.	4.05 *N5*		5.45 *N5*										
	Gary, Ind. Harbor, Indiana	4.05 *I3, U1,Y1*	4.95 *I3, U1,Y1*	5.45 *U1, I3*	5.375 *I3, U1*	5.85 *U1*	6.10 *U1,I3, Y1*	7.50 *U1, Y1*				$8.70 *I3, U1,Y1*	$7.40 *I3, U1*	6.10 *U1, Y1*
	Granite City, Ill.	4.25 *G2*	5.15 *G2*	5.65 *G2*	5.575 *G2*								$7.60 *G2*	6.30 *G2*
	Kokomo, Ind.	4.15 *C9*		5.55 *C9*						5.20 *C9*	4.775 *C9*			
	Mansfield, Ohio					5.85 *E2*				5.175 *E2*				
	Middletown, Ohio		4.95 *A7*		5.375 *A7*	5.85 *A7*								
	Niles, Ohio Sharon, Pa.	4.05 *S1,R3* 5.30 *N3*	4.95 *R3* 5.975 *N3*	5.45 *N3*	6.725 *N3*	5.85 *N3*	6.10 *S1,R3*	7.50 *R3*				$8.70 *R3*	$7.40 *R3*	
	Pittsburgh, Pa. Midland, Pa. Butler, Pa.	4.05 *J3, U1,P6, A7*	4.95 *J3, U1,P6*	5.45 *U1*	5.375 *U1*		6.10 *J3, U1*	7.50 *J3, U1*	8.20 *U1*		4.675 *A5* 4.875 *P6*	$8.70 *J3, U1*	$7.40 *J3, U1*	6.10 *U1*
	Portsmouth, Ohio	4.05 *P7*	4.95 *P7*								4.675 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	4.05 *W3, W5*	4.95 *W3, W5,F3*	5.45 *W3, W5*	—	5.85 *W3, W5*	6.10 *W3*	7.50 *W3*				$8.70 *W3, W5*	$7.40 *W3, W5*	6.10 *F3, W5*
	Youngstown, Ohio	4.05 *U1, Y1*	4.95 *Y1*		5.375 *Y1*		6.10 *U1, Y1*	7.50 *Y1*			4.625 *Y1*			
WEST	Fontana, Cal.	4.825 *K1*	6.05 *K1*				6.875 *K1*	8.55 *K1*			5.475 *K1*			
	Geneva, Utah	4.15 *C7*					6.45 *C7*							
	Kansas City, Mo.													
	Los Angeles, Torrance, Cal.	—			—						5.475 *C7, B2*			
	Minnequa, Colo.										4.925 *C6*			
	San Francisco, Niles, Pittsburg, Cal.	4.75 *C7*	5.90 *C7*	6.20 *C7*							5.325 *C7*	$9.45 *C7*	$8.15 *C7*	
	Seattle, Wash.	—												
SOUTH	Atlanta, Ga.													
	Fairfield, Ala. Alabama City, Ala.	4.05 *R3, T2*	4.95 *T2*	5.45 *R3, T2*			6.10 *T2*			5.35 *R3*	4.675 *T2, R3*	$8.80 *T2*	$7.50 *T2*	
	Houston, Texas	4.45 *S2*								—	5.075 *S2*		—	

STEEL PRICES

(Effective July 13, 1954)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfg's. Bright
EAST	Bethlehem, Pa.				5.075 *B3*	6.625 *B3*	6.45 *B3*					
	Buffalo, N. Y.	4.30 *B3* 4.33 *R3*	4.30 *B3* 4.33 *R3*	5.45 *B5*	5.075 *B3* 5.105 *R3*	6.625 *B3,B5*	6.45 *B3*	4.225 *B3*			6.45 *B3*	5.75 *W6*
	Claymont, Del.							4.225 *C4*		5.80 *C4*		
	Coatesville, Pa.							4.225 *L4*		5.80 *L4*		
	Conshohocken, Pa.							4.225 *A2*	5.275 *A2*		6.45 *A2*	
	Harrisburg, Pa.							3.85 *C3*	5.15 *C3*			
	Hartford, Conn.			5.90 *R3*		6.925 *R3*						
	Johnstown, Pa.	4.30 *B3*	4.30 *B3*		5.075 *B3*		6.45 *B3*	4.225 *B3*		5.80 *B3*	6.45 *B3*	5.75 *B3*
	Fairless, Pa.	4.45 *U1*	4.45 *U1*		5.225 *U1*							
	Newark, N. J.			5.85 *W10*		6.80 *W10*						
	Camden, N. J.			5.85 *P10*								
	Putnam, Conn.			5.95 *W10*								
	Sparrows Pt., Md.		4.30 *B3*					4.225 *B3*		5.80 *B3*	6.45 *B3*	5.85 *B3*
	Palmer, Worcester, Mansfield, Mass.			5.95 *B5*		7.075 *B5*						6.05 *A5*, *W6*
	Readville, Mass.											
MIDDLE WEST	Alton, Ill.											
	Ashland, Newport, Ky.							4.225 *A7*		5.80 *N5*		
	Canton-Massillon, Ohio			5.40 *R2* 5.44 *R3*	4.875 *T5* 5.115 *R3*	6.325 *T5* 6.665 *R2,R3*						
	Chicago, Joliet, Ill.	4.30 *U1, N4,W8* 4.37 *R3*	4.30 *N4* 4.37 *R3*	5.40 *A5,W10, W8,B5,L2*	5.075 *U1, W8* 5.145 *R3*	6.625 *A5,W8, W10,L2, B5*		4.225 *U1,W8, I3, A1*	5.275 *U1*	5.80 *U1*	6.45 *U1*	5.75 *A5, R3,N4*
	Cleveland, Ohio	4.36 *R3*	4.36 *R3*	5.40 *A5,C13*		6.665 *A5, C13*		4.225 *J3* 4.285 *R3*	5.275 *J3*		6.45 *J3*	5.75 *A5, C13*
	Detroit, Mich.	4.45 *R5,G3*		5.55 *R5* 5.60 *B5,P8* 5.65 *P3*	5.175 *R5* 5.225 *G3*	6.725 *R5* 6.825 *B5,P3, P8*	6.60 *G3*	4.375 *G3*			6.60 *G3*	
	Duluth, Minn.											5.75 *A5*
	Gary, Ind. Harbor, Crawfordsville	4.30 *I3, U1, Y1*	4.30 *I3, U1, Y1*	5.40 *M5* 5.47 *R3*	5.075 *I3, U1, Y1*	6.525 *M5* 6.695 *R3*	6.45 *U1,I3, Y1*	4.225 *I3, U1,Y1*	5.275 *I3*	5.80 *U1*	6.45 *U1,I3, Y1*	5.85 *M4*
	Granite City, Ill.							4.425 *G2*				
	Kokomo, Ind.											5.85 *C9*
	Sterling, Ill.	4.30 *N4*	4.30 *N4*									5.75 *N4*
	Niles, Ohio Sharon, Pa.	4.34 *R3*						4.225 *S1*		5.80 *S1*	6.45 *S1*	
	Pittsburgh, Pa. Midland, Pa.	4.30 *J3, U1*	4.30 *J3, U1*	5.40 *A5,C8, J3,W10,B4* 5.46 *R3*	5.075 *U1,C11,*	6.625 *A5,C11, W10,C8* 6.685 *R3*	6.45 *J3, U1*	4.225 *J3, U1*	5.275 *U1*	5.80 *U1*	6.45 *J3, U1*	5.75 *A5,J3, P6*
	Portsmouth, Ohio											5.75 *P7*
	Weirton, Wheeling, Follansbee, W. Va.	4.30 *W3*						4.225 *W3, W5*				
	Youngstown, Ohio	4.30 *U1,Y1* 4.35 *R3*	4.30 *U1,Y1* 4.35 *R3*	5.40 *F2, Y1*	5.075 *U1,Y1,*	6.625 *Y1* 6.665 *F2*	6.45 *U1,Y1*	4.225 *U1,Y1*			6.45 *Y1*	5.75 *Y1*
WEST	Emeryville, Cal.	5.05 *J5*	5.05 *J5*									
	Fontana, Cal.	5.00 *K1*	5.00 *K1*		6.125 *K1*		7.70 *K1*	4.875 *K1*		6.85 *K1*	7.15 *K1*	
	Geneva, Utah							4.225 *C7*			6.45 *C7*	
	Kansas City, Mo.	4.90 *S2*	4.90 *S2*		5.675 *S2*		7.05 *S2*					6.35 *S2*
	Los Angeles, Torrance, Cal.	5.00 *B2,C7*	5.00 *B2,C7*	6.85 *R3* 7.16 *R3*	6.125 *B2*		7.15 *B2*					6.70 *B2*
	Minnequa, Colo.	4.75 *C6*	4.90 *C6*					5.075 *C6*				5.90 *C6*
	Portland, Ore.	4.90 *O2*										
	San Francisco, Niles, Pittsburg, Cal.	5.00 *C7,P9* 5.05 *B2*	5.00 *C7,P9* 5.05 *B2*				7.20 *B2*					6.70 *C7*
	Seattle, Wash.	5.05 *B2, P12*	5.05 *B2, P12*				7.20 *B2*	5.125 *B2*		6.70 *B2*	7.35 *B2*	
SOUTH	Atlanta, Ga.	4.50 *A8*	4.50 *A8*									5.95 *A8*
	Fairfield, Ala. City, Birmingham, Ala.	4.30 *T2,C16* 4.33 *R3*	4.30 *T2* 4.33 *R3*				6.45 *T2*	4.225 *T2* 4.255 *R3*			6.45 *T2*	5.75 *R3, T2*
	Houston, Ft. Worth, Lone Star, Tex.	4.70 *S2*	4.70 *S2*		5.475 *S2*		6.85 *S2*	5.625 *S2*		6.20 *S2*	6.85 *S2*	6.25 *S2*

Steel Prices

(Effective July 13, 1954)

Key to Steel Producers

With **Principal Offices**

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angell Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, O.
A8 Atlantic Steel Co., Atlanta, Ga.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Central Iron & Steel Co., Harrisburg, Pa.
C4 Claymont Products Dept., Claymont, Del.
C5 Cold Metal Products Co., Youngstown, O.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, New York
C12 Cumberland Steel Co., Cumberland, Md.
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham

D1 Detroit Steel Corp., Detroit
D2 Detroit Tube & Steel Div., Detroit
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire Steel Co., Mansfield, O.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimmons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G1 Globe Iron Co., Jackson, O.
G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Cal.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid-States Steel & Wire Co., Crawfordsville, Ind.
M5 Monarch Steel Co., Inc., Hammond, Ind.
M6 Mystic Iron Works, Everett, Mass.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N3 Niles Rolling Mill Div., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N5 Newport Steel Corp., Newport, Ky.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P12 Pacific Steel Rolling Mills, Seattle

R1 Reeves Steel & Mfg. Co., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 Rotary Electric Steel Co., Detroit
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Corp., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw & Steel Co., Fitchburg, Mass.
S6 Standard Forging Corp., Chicago
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Corp., Carnegie, Pa.
S10 Sweet's Steel Co., Williamsport, Pa.

T1 Tonawanda Iron Div., N. Tonawanda, N. Y
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T6 Tremont Nail Co., Wareham, Mass.
T7 Texas Steel Co., Fort Worth

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Fred Ulbrich & Sons, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Co., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wycoff Steel Co., Pittsburgh
W11 Worcester Pressed Steel Co., Worcester, Mass.

Y1 Youngstown Sheet & Tube Co., Youngstown

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.

	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½ In.		3 In.		3½-4 In.	
STANDARD T. & C.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. *B3*	21.75	6.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0								
Youngstown *R3*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0								
Fontana *K1*	10.75	+4.5	13.75	+0.5	16.25	1.0	18.75	3.75	19.25	4.75	19.75	5.25	21.75	5.0								
Pittsburgh *J3*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75
Alton, Ill. *L1*	21.75	6.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0								
Sharon *M3*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0								
Fairless *N2*	21.75	6.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0								
Pittsburgh *N1*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75
Wheeling *W5*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0								
Wheatland *W4*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0								
Youngstown *Y1*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75
Indiana Harbor *Y1*	22.75	7.5	25.75	11.5	28.25	15.0	30.75	15.75	31.25	16.75	31.75	17.25	33.25	17.0								
Lorain *N2*	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.75	32.75	19.25	33.25	18.0								
Youngstown *R3*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0								
Fairless *N2*	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.75	32.75	19.25	33.25	18.0								
Fontana *K1*	14.25		18.25		20.25		20.75		21.25		21.75		22.25									
Pittsburgh *J3*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75
Alton, Ill. *L1*	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.25	32.75	19.25	33.25	18.0								
Sharon *M3*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.75	35.25	20.0								
Pittsburgh *N1*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.75	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75
Wheeling *W5*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.75	35.25	20.0								
Wheatland, *W4*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.75	35.25	20.0								
Youngstown *Y1*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.75	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75
Indiana Harbor *Y1*	26.25	12.5	30.25	16.5	32.25	20.0	32.75	18.75	33.25	19.75	33.75	20.75	34.25	19.0								
Lorain *N2*	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.75	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75

Threads only, buttweld and seamless 2¼ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 4½ pt. higher discount. Buttweld jobbers' discount, 5 pct.

Galvanized discounts based on zinc price in range of over 9¢ to 11¢ incl. per lb, East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt. e.g., zinc price in range of over 11¢ to 13¢ would lower discounts; zinc price in range of over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 11.80¢ per lb.

Steel Prices

(Effective July 13, 1954)

To identify producers, see Key on preceding page

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Treated
Bessemer *U1*	4.45	5.35	5.425				
So. Chicago *R3*				7.30			
Ensley *T2*	4.45	5.35					
Fairfield *T2*		5.35		7.30		5.275	
Gary *U1*	4.45	5.35				5.275	
Ind. Harbor *I3*	4.45		5.425	7.30		5.275	
Johnstown *B3*		5.35					
Joliet *U1*		5.35	5.425				
Kansas City *S2*				7.30			11.00
Lackawanna *B3*	4.45	5.35	5.425			5.275	
Minnequa *C6*	4.45	5.35	5.425	7.30		5.275	11.00
Pittsburgh *O1*					10.50		11.00
Pittsburgh *P5*					10.50		11.00
Pittsburgh *J3*				7.30			
Seattle *B2*				7.89		5.425	11.50
Steelton *B3*	4.45		5.425			5.275	
Struthers *Y1*				7.30			
Torrance *C7*						5.425	
Youngstown *R3*				7.30			

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Fully Processed
Field	8.025	8.225	
Armature	8.50	8.75	9.25
Elect.	9.10	9.35	9.85
Motor	10.10	10.35	10.85
Dynamo	11.00	11.25	11.75
Trans. 72	11.95	12.20	12.70
Trans. 65	12.50	Grain Oriented	
Trans. 58	13.00	Trans. 80	16.60
Trans. 52	14.00	Trans. 73	17.10

Producing points: Beech Bottom (*W5*); Brackenridge (*A5*); Granite City (*G2*); Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*N5*); Niles, O. (*N3*); Vandergrift (*U1*); Warren, O. (*R3*); Zanesville (*A7*).

* Coils 75¢ higher.

CLAD STEEL

	Plate	Sheet
Stainless-carbon		
No. 304, 20 pct.		
Coatesville, Pa., *L4*	*32.7	
Washington, Pa., *J3*	....	
Claymont, Del., *C4*	....	
New Castle, Ind., *I2*	....	32.50
Nickel-carbon		
10 pct. Coatesville, Pa., *L4*	37.5	
Inconel-carbon		
10 pct., Coatesville, Pa., *L4*	46.10	
Monel-carbon		
10 pct. Coatesville, Pa., *L4*	38.90	

* Includes annealing and pickling, sandblasting.

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nails	Woven Wire Fence 9–15½ ga.	"T" Fence Posts	Single Loop Bale Ties	Galv. Barbed and Twisted Barbless Wire	Merch. Wire Ann'ld ¢/lb.	Merch. Wire* Galv. ¢/lb.
	Col	Col	Col	Col	Col		
Alabama City *R3*	137	146	...	155	159	6.90	7.30
Aliquippa, Pa. *J3*	137	149	...	...	156	6.90	7.45
Atlanta *A8*	139	151	...	157	164	7.00	7.525
Bartonville *K2*	139	151	...	157	164	7.00	7.55
Buffalo *W6*	...	...	...	...	...	6.90	7.30
Chicago, Ill. *N4*	137	149	...	155	162	6.90	7.45
Cleveland *A6*	142	...	...	...	...	...	...
Cleveland *A5*	...	...	...	...	...	6.90	...
Crawfordsville *M4*	139	151	...	157	159	7.00	7.55
Donora, Pa. *A5*	137	146	...	155	159	6.90	7.30
Duluth *A5*	137	146	...	155	159	6.90	7.30
Fairfield, Ala. *T2*	137	146	...	155	159	6.90	7.30
Galveston *D4*	...	...	...	...	...	...	...
Houston *S2*	145	154	...	...	167	7.30	7.70
Johnstown, Pa. *B3*	137	149	...	...	162	6.90	7.45
Joliet, Ill. *A5*	137	146	...	155	159	6.90	7.30
Kokomo, Ind. *C9*	139	148	...	157	161	7.02	7.55
Los Angeles *B2*	...	...	...	...	...	7.85	...
Kansas City *S2*	148	158	...	167	171	7.50	7.90
Minnequa *C6*	142	156	150	160	168	7.15	7.55
Monessen *P6*	137	151	...	...	163	6.90	7.45
Moline, Ill. *R3*	...	...	145	...	...	...	...
Pittsburg, Cal. *C7*	156	169	...	179	179	7.85	8.25
Portsmouth *P7*	...	...	...	...	...	6.90	...
Rankin, Pa. *A5*	137	146	...	...	159	6.90	7.30
So. Chicago *R3*	137	146	145	155	159	6.90	7.30
S. San Francisco *C6*	...	...	...	...	179	...	...
Sparrows Pt. *B3*	139	...	...	157	164	7.00	7.55
Struthers, O. *Y1*	...	...	...	...	...	6.90	7.55
Worcester *A5*	143	...	...	...	...	7.20	...
Williamsport, Pa. *S10*	...	...	...	...	...	...	...

Cut Nails, carloads, base $8.30 per keg at Conshohocken, Pa. (*A2*).

* Alabama City and So. Chicago don't include zinc extra. Galvanized products computed with zinc at 11.0¢ per lb.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26–0.40	0.41–0.60	0.61–0.80	0.81–1.05	1.06–1.35
Bridgeport, Conn. *S7**	5.75	8.05	9.00	10.95	13.25
Carnegie, Pa. *S9*	...	7.65	8.60	10.55	12.85
Cleveland *A5*	5.75	8.05	9.00	11.15	13.85
Detroit *D1*	5.90	8.25	9.20	10.95	...
Detroit *D2*	5.90	8.25	9.20	...	...
Harrison, N. J. *C11*	...	...	...	...	...
Indianapolis *C5*	5.75	8.05	9.00	10.95	...
New Castle, Pa. *B4*	5.75	8.05	9.00	10.95	...
New Haven, Conn. *D1*	6.20	8.35	9.30	11.25	...
Riverdale, Ill. *A1*	5.85	8.05	9.00	10.95	13.25
Buffalo, N. Y. *R7*	...	...	...	...	...
Sharon, Pa. *S1*	5.75	8.05	9.00	10.95	13.25
Trenton *R4*	...	8.35	9.30	11.25	13.40
Wallingford *W1*	6.20	8.35	9.30	11.25	13.55
Warren, Ohio *T4*	5.75	8.05	9.00	10.95	13.25
Weirton, W. Va. *W3*	5.85	8.05	9.00	10.95	13.25
Worcester, Mass. *A5*	6.60	8.35	9.30	11.45	14.15
Youngstown *C5*	5.75	8.05	9.00	10.95	...

* Sold on Pittsburgh base.

BOILER TUBES

$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	Size B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
Babcock & Wilcox	2	13	28.33	33.97	26.51	31.91
	2½	12	38.15	45.74	35.70	43.07
	3	12	44.05	52.82	41.23	49.73
	3½	11	51.43	61.66	48.13	58.06
	4	10	68.29	81.28	63.92	77.10
National Tube	2	13	28.33	33.97	26.51	...
	2½	12	38.15	45.74	35.70	...
	3	12	44.05	52.82	41.23	...
	3½	11	51.43	61.66	48.13	...
	4	10	68.29	81.28	63.92	...
Pittsburgh Steel	2	13	28.33	33.97	...	...
	2½	12	38.15	45.74	...	...
	3	12	44.05	52.82	...	...
	3½	11	51.43	61.66	...	...
	4	10	68.29	81.28	...	...

WAREHOUSES

Base price, f.o.b., dollars per 100 lb.

Cities	City Delivery Charge	Sheets: Hot-Rolled	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (18 gage)	Strip: Hot-Rolled	Strip: Cold-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled	Bars: Cold-Finished	Alloy Bars: Hot-Rolled A-4615 As rolled	Alloy Bars: Hot-Rolled A-4140 Annealed	Alloy Bars: Cold-Drawn A-4615 As rolled	Alloy Bars: Cold-Drawn A-4140 Annealed
Baltimore	$.20	6.20	7.12	7.36–7.78	7.00	.....	6.85	6.98	6.86	8.17	.....	.....	.....	.....
Birmingham	.15	6.10	7.00	8.00[4]	6.30	.....	6.35	6.35	6.15	8.90	.....	.....	.....	.....
Boston	.20	6.89	7.53–7.83	9.18–	7.13–	9.35[2]	7.13	7.06	6.87	8.35	12.40	11.94–12.13	14.65	14.55–14.58
Buffalo	.25	6.11	7.10	8.65	6.50	.....	6.45	6.49	6.27	7.65	.....	11.97	14.45	14.30
Chicago	.20	6.18	7.12	7.95	6.42	.....	6.33	6.46	6.28	7.38	.....	11.60	.....	14.05
Cincinnati	.20	6.30	7.11	8.00	6.66	.....	6.62	6.93	6.52	7.60	.....	11.85	.....	14.30
Cleveland	.20	6.18	7.12	8.25	6.58	.....	6.50	6.79	6.34	7.40	12.04	11.74	14.29	14.19
Denver		7.95	8.85	10.45–10.47	8.20	9.55	7.95	7.95	8.05	9.05	.....	.....	.....	15.75
Detroit	.20	6.38	7.29	8.22	6.60	8.36	6.80	6.91	6.56	7.60	12.27	11.97	14.52	13.45–14.42
Houston	.20	7.15	7.60	9.23	7.45	.....	7.20	7.35	7.45	9.30	.....	12.80	.....	.....
Kansas City	.20	6.85	.....	.....	7.09	.....	7.00	7.13	6.95	8.07	.....	.....	.....	.....
Los Angeles	.20	7.25	9.00	8.85–9.50	7.55	.....	7.20	7.35	7.15	9.75	.....	12.90	.....	15.90
Memphis	.10	6.79	7.69	.....	6.90	.....	7.01	7.09	6.88	7.89–8.76	.....	.....	.....	.....
Milwaukee	.20	6.35	7.29	8.12	6.59	.....	6.50	6.63	6.45	7.57	.....	11.77	.....	14.22
New Orleans	.15	6.51	7.41	.....	6.63	.....	6.73	6.81	6.60	8.37	.....	.....	.....	.....
New York	.30	6.78	7.52–7.75	8.37–8.41[7]	7.16	9.15[3]	6.99	6.90	7.06	8.43	12.29	11.99	14.54	14.44
Norfolk	.20	6.90	.....	.....	7.00	.....	7.00	7.00	7.00	8.50	.....	.....	.....	.....
Philadelphia	.25	6.35	7.13	7.87	7.02	.....	6.63	6.67	6.87	8.19	.....	11.75	.....	14.19
Pittsburgh	.20	6.18	7.12	8.00	6.55	.....	6.33	6.46	6.28	7.65	.....	11.60	.....	14.05
Portland	.10	7.60	8.45	9.05	7.65	.....	7.25	7.25	7.35	10.65	.....	.....	.....	.....
Salt Lake City	.20	8.60	10.50	10.50[3]	9.25	.....	8.10	8.25	9.20	11.25	.....	.....	.....	.....
San Francisco	.20	7.35	8.70	8.95–9.45	7.60	.....	7.20	7.25	7.15	9.75	.....	12.90	.....	15.90
Seattle	.20	7.95–8.15	9.30–9.50	9.60–9.80	7.80–8.00	.....	7.40–7.60	7.30–7.50	7.40–7.60	10.45–10.65	.....	13.15	.....	15.60
St. Louis	.20	6.48	7.42	8.25	6.72	7.70–8.53	6.73	6.86	6.58	7.70	12.20	11.90	14.45	14.30–14.35
St. Paul	.15	6.84	7.78	8.61	7.08	13.22	6.99	7.12	6.94	8.06	.....	12.42	.....	.....

Base Quantities (Standard unless otherwise keyed): Cold finished bars; 2000 lb or over. Alloy bars; 1000 to 1999 lb. All others; 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets, for quantity.

Exceptions: (1) 500 to 1499 lb. (2) 20,000 lb or over. (3) 450 to 1499 lb. (4) 500 to 9999 lb. (5) 1000 lb or over. (6) 400 to 1499 lb. (7) 1500 to 3499 lb. (8) 2000 to 5999 lb.

Miscellaneous Prices

(Effective July 13, 1954)

TOOL STEEL

F.o.b. Mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	$1.54
18	4	1	—	5	2.185
18	4	2	—	—	1.705
1.5	4	1.5	8	—	.90
6	4	2	6	—	1.29

High-carbon chromium ..... .73
Oil hardened manganese ..... .405
Special carbon ..... .37
Extra carbon ..... .315
Extra carbon ..... .31

Warehouse prices on and east of Mississippi are 3.5¢ per lb higher. West of Mississippi, 5.5¢ higher.

CAST IRON WATER PIPE

	Per Net Ton
6 to 24-in., del'd Chicago	$111.80 to $115.30
6 to 24-in., del'd N. Y...	115.00 to 116.00
6 to 24-in., Birmingham	98.00 to 102.50

6-in. and larger f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipments less .....$129.50 to $131.50

Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

LAKE SUPERIOR ORES

51.50% Fe; natural content, delivered lower Lake ports. Prices effective July 1, 1953, to end of 1954 season.

	Gross Ton
Openhearth lump	$11.15
Old range, bessemer	10.30
Old range, nonbessemer	10.15
Mesabi, bessemer	10.05
Mesabi, nonbessemer	9.90
High phosphorus	9.90

Prices based on upper Lakes rail freight rates, Lake vessel freight rates, handling and unloading charges, and taxes thereon, in effect on June 24, 1953. Increases or decreases after such date are for buyer's account.

COKE

	Net-Ton
Furnace, beehive (f.o.b. oven) Connellsville, Pa.	$14.25 to $14.50
Foundry, beehive (f.o.b. oven) Connellsville, Pa.	$16.50 to $17.00
Foundry, oven coke	
Buffalo, del'd	$28.08
Chicago, f.o.b.	24.50
Detroit, f.o.b.	25.50
New England, del'd	26.05
Seaboard, N. J., f.o.b.	24.00
Philadelphia, f.o.b.	23.00
Swedeland, Pa., f.o.b.	23.85
Painesville, Ohio, f.o.b.	24.00
Erie, Pa., f.o.b.	25.00
Cleveland, del'd	27.43
Cincinnati, del'd	26.56
St. Paul, f.o.b.	23.75
St. Louis, f.o.b.	26.00
Birmingham, f.o.b.	22.65
Lone Star, Tex., f.o.b.	18.50

ELECTRODES

Cents per lb, f.o.b. plant, threaded, with nipples, unboxed

GRAPHITE			CARBON		
Diam. (in.)	Length (in.)	Price	Diam. (in.)	Length (in.)	Price
24	84	20.50	40	100, 110	8.95
20	72	20.00	35	110	8.95
17 to 18	72	20.50	30	110	8.95
7 to 10	60	21.00	24	72 to 84	9.10
6	60	23.25	20	90	8.95
4	40	26.00	17	72	9.10
3	40	27.25	14	72	9.50
2½	30	28.00	10, 12	60	10.30
2	24	43.50	8	60	10.55

BOLTS, NUTS, RIVETS, SCREWS

Consumer Prices

(Base, discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

Nuts, Hot Pressed, Cold Punched—Sq.

Pct Off List

	Less Keg Reg.	K.	Less Keg Hvy.	K.
½ in. & smaller	+2	15	+2	18
9/16 in. & ⅝ in.	+7	11	+32*	+10*
¾ in. to 1½ in. inclusive	+8	10	+27**	+6**
1⅝ in. & larger	+9	9	+27	+6

* 9/16 to ¾ in.
** ⅞ to 1½ in.

Nuts, Hot Pressed—Hexagon

½ in. & smaller	11	26	8	23
9/16 in. & ⅝ in.	2	18	+20	net
¾ in. to 1½ in. inclusive	+6	12	+25	+4
1⅝ in. & larger	+8	10	+25	+4

Nuts, Cold Punched—Hexagon

½ in. & smaller	11	26	8	23
9/16 in. & ⅝ in.	9	24	+2	15
¾ in. to 1½ in. inclusive	+1	16	+9	9
1⅝ in. & larger	+16	3	+20	net

Nuts, Semi-Finished—Hexagon

½ in. & smaller	23	36	14	28
9/16 in. & ⅝ in.	18	32	4	20
¾ in. to 1½ in. inclusive	8	23	+8	10
1⅝ in. & larger	+14	5	+20	net
	Light			
7/16 in. & smaller	33	43		
½ in. thru ⅝ in.	26	37		
¾ in. to 1½ in. inclusive	18	30		

Stove Bolts

Pct Off List

Packaged, steel, plain finished 44½—10
Packaged, plain finish ..... 35½—10
Bulk, plain finish** 59*

* Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

**Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

Rivets

Base per 100 lb

½ in. & larger $8.90

Pct Off List

7/16 in. and smaller 30

Cap and Set Screws

(In bulk) — *Pct Off List*

Hexagon head cap screws, coarse or fine thread, ¼ in. thru ⅝ in. x 6 in., SAE 1020, bright 40
¾ in. thru 1 in. up to & including 6 in. 26
¼ in. thru ⅝ in. x 6 in. & shorter high C double heat treat 43
¾ in. thru 1 in. up to & including 6 in. 33
Milled studs 17
Flat head cap screws, listed sizes ... 12
Fillister head cap, listed sizes 7
Set screws, sq. head, cup point, 1 in. diam. and smaller x 6 in. & shorter 37

Machine and Carriage Bolts

Pct Off List

	Less Case	C.
½ in. & smaller x 6 in. & shorter	4	20
9/16 in. & ⅝ in. x 6 in. & shorter	5	21
¾ in. & larger x 6 in. & shorter	3	19
All diam. longer than 6 in...	+4	13
Lag, all diam. x 6 in. & shorter	12	27
Lag, all diam. longer than 6 in.	8	23
Plow bolts	30	..

REFRACTORIES

Fire Clay Brick

Carloads per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5.00) $109.00
No. 1 Ohio 102.00
Sec. quality, Pa., Md., Ky., Mo., Ill. 102.00
No. 2 Ohio 93.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50)..... 16.00

Silica Brick

Mt. Union, Pa., Ensley, Ala. $115.00
Childs, Hays, Pa. 120.00
Chicago District 125.00
Western Utah 131.00
California 138.00
Super Duty
Hays, Pa., Athens, Tex., Windham 132.00
Curtner, Calif. 150.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.) 19.00
Silica cement, net ton, bulk, Hays, Pa. 21.00
Silica cement, net ton, bulk, Chicago District, Ensley, Ala. 20.00
Silica cement, net ton, bulk, Utah and Calif. 28.50

Chrome Brick

Per net ton

Standard chemically bonded Balt.. $86.00
Standard chemically bonded, Curtner, Calif. 96.25
Burned, Balt. 80.00

Magnesite Brick

Standard Baltimore $109.00
Chemically bonded, Baltimore 97.50

Grain Magnesite

St. ⅝-in. grains

Domestic, f.o.b. Baltimore in bulk fines removed $64.40
Domestic, f.o.b. Chewalah, Wash., Luning, Nev.
in bulk 38.00
in sacks 43.75

Dead Burned Dolomite

Per net ton

F.o.b. bulk, producing points in:
Pa., W. Va., Ohio $14.50
Midwest 14.60
Missouri Valley 13.65

FLUORSPAR

Washed gravel, f.o.b. Rosiclaire, Ill.
Price, net ton; Effective CaF_2 content
72½% $44.00
70% or more 42.50
60% or less 38.00

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.i.f. New York, ocean bags ... 11.25¢
Canadian sponge iron,
Del'd in East ..... 12.0¢
F.o.b. shipping point ..... 10.5¢
Domestic sponge iron, 98+% Fe, carload lots ..... 18.0¢
Electrolytic iron, annealed, 99.5+% Fe ..... 38.0¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe 53.5¢
Hydrogen reduced iron minus 300 mesh, 98+% Fe..63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 mieron, 98%, 99.8+% Fe..83.0¢ to $1.48
Aluminum ..... .5¢
Brass, 10 ton lots .....29.50¢ ..¢
Copper, electrolytic ..... .50¢
Copper, reduced ..... .50¢
Cadmium, 100-199 lb 95¢ plus n..... value
Chromium, electrolytic, 99% min., and quality, del'd... $3.60
Lead ..... 21.00¢
Manganese ..... 57.0¢
Molybdenum, 99% $2.75
Nickel, unannealed ..... 89.50¢
Nickel, annealed ..... 96.50¢
Nickel, spherical, unannealed 93.50¢
Silicon ..... 43.50¢
Solder powder..7.0¢ to 9.0¢ plus met. value
Stainless steel, 302 ..... 91.0¢
Stainless steel, 316 ..... $1.10
Tin .....14.04¢ plus metal value
Tungsten, 99% (65 mesh) .. $4.65
Zinc, 10 ton lots .....17.5¢ to 25.0¢

Ferroalloy Prices

(Effective July 13, 1954)

Ferrochrome

Contract prices, cents per lb contained Cr, lump size, bulk, in carloads, delivered.
65-72 Cr, 2% max. Si.

0.025% C	34.50	0.20% C	33.50
0.06% C	34.50	0.50% C	33.25
0.10% C	34.00	1.00% C	33.00
0.15% C	33.75	2.00% C	32.75

65-69% Cr, 4.9% C 24.75
62-66% Cr, 4.6% C, 6-9% Si 25.60

S. M. Ferrochrome

Contract prices, cents per pound, chromium contained, lump size, delivered.
High carbon type: 60.65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.
Carloads 25.85
Ton lots 28.00
Less ton lots 29.50

High-Nitrogen Ferrochrome

Low-carbon type 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 3¢ for each additional 0.25% of N.

Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.
0.10% max. C $1.18
0.50% max. C 1.14
9 to 11% C 1.11

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed, lump 4-in. x down, 24.75¢ per lb contained Cr plus 10.80¢ per lb contained Si. Bulk 2-in. x down, 25.05¢ per lb contained Cr plus 10.80¢ per lb contained Si. Bulk 1-in. x down, 25.25¢ per lb contained Cr plus 11.00¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, lump, delivered.
30-33% Cr, 60-65% Si, 3.00 max. Fe.
Carloads 19.00
Ton lots 22.10
Less ton lots 23.60

Calcium-Manganese—Silicon

Contract prices, cents per lb of alloy, lump, delivered.
16-20% Ca, 14-18% Mn, 53-59% Si.
Carloads 20.00
Ton lots 22.30
Less ton lots 23.30

SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ⅛ in. x 12 mesh.
Ton lots 17.50
Less ton lots 19.50

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.
Carload lots 16.60
Ton lots 18.10
Less ton lots 19.35

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%; Ti 9 to 11%, Ca 5 to 7%.
Carload packed 17.50
Ton lots to carload packed 18.50
Less ton lots 20.00

Ferromanganese

Maximum contract base price, f.o.b., lump size, base content 74 to 76 pct Mn;

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	10.00
Clairton, Pa.	10.00
Sheridan, Pa.	10.00
Philo, Ohio	10.00

Add or subtract 0.1¢ for each 1 pct Mn above or below base content.
Briquets, delivered, 66 pct Mn:
Carloads, bulk 12.50
Ton lots packed 14.05

Spiegeleisen

Contract prices, per gross ton, lump, f.o.b. Palmerton, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$84.00
19 to 21%	3% max.	86.00
21 to 23%	3% max.	88.50
23 to 25%	3% max.	91.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.
95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.
Carload, packed 38.95
Ton lots 38.45

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.
Carloads 30.00
Ton lots 33.00
250 to 1999 lb 34.00
Less than 250 lb 37.00
Premium for hydrogen-removed metal 0.75

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn ..... 21.25¢

Low-Carb Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	30.00	31.85	33.05
0.07% max. C	27.95	29.80	31.00
0.15% max. C	27.45	29.30	30.50
0.30% max. C	26.95	28.80	30.00
0.50% max. C	26.45	28.30	29.50
0.75% max. C, 80-85% Mn, 5.0-7.0% Si	23.45	25.30	26.50

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢.
Carload bulk 11.00
Ton lots 12.65
Briquet contract basis carlots, bulk, delivered, per lb of briquet 12.65
Ton lots, packed 14.25

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $92.00 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $89.50. Add $1.00 per ton for each additional 0.50% Si up to and including 17%. Add $1.45 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, packed.

	Ton lots	Carloads
96% Si, 2% Fe	20.10	18.00
97% Si, 1% Fe	20.60	18.50

Silicon Briquets

Contract price, cents per pound of briquet, bulk, delivered, 40% Si, 2 lb Si briquets.
Carloads, bulk 6.30
Ton lots 7.90

Electric Ferrosilicon

Contract price, cents per lb contained Si, lump, bulk, carloads, delivered.

25% Si	30.00	75% Si	13.80
50% Si	10.80	85% Si	15.55
65% Si	12.20	90.55% Si	17.00

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
Less ton lots	2.40	3.30	4.55

Ferrovanadium

35-55% contract basis, delivered, per pound, contained V.
Openhearth ..... $3.00-$3.10
Crucible 3.10- 3.20
High speed steel (Primos) .. 3.20- 3.25

Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads ..... 9.25¢
Ton lots 10.15

Calcium molybdate, 46.3-46.6% f.o.b. Langeloth, Pa., per pound contained Mo $1.15

Ferrocolumbium, 50-60%, 2 in. x D contract basis, delivered per pound contained Cb.
Ton lots $9.50
Less ton lots 9.85

Ferro-Tantalum-Columbium, 20% Ta, 40% Cb, 0.30% C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta $4.75

Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo $1.32

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $4.00 unitage, per gross ton $90.00
10 tons to less carload $110.00

Ferrotitanium, 40% regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti $1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti $1.50
Less ton lots 1.55

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload, per net ton $177.00

Ferrotungsten, ¼ x down, packed, per pound contained W, ton lots, f.o.b. $3.50

Molybdic oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa. $1.14
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.13

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound.
Carload, bulk, lump ..... 15.50¢
Ton lots, packed lump ..... 16.75¢
Less ton lots, lump, packed 17.25¢

Vanadium Pentoxide, 86-89% V_2O_5 contract basis, per pound contained V_2O_5 ..... $1.31

Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.
Ton lots ..... 21.00¢

Zirconium, 12-15%, contract basis lump, delivered, per lb of alloy.
Carload, bulk ..... 8.00¢

Boron Agents

Borosil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed. B, 3-4%, Si, 40-45%, per lb contained B $5.25

Bortam, f.o.b. Niagara Falls
Ton lots, per pound ..... 45¢
Less ton lots, per pound .... 50¢

Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.
Ton lots per pound ..... 10.00¢

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, Ton lots ... $1.30
F.o.b. Wash., Pa.; 100 lb up
10 to 14% B ..... .85
14 to 19% B 1.20
19% min. B 1.90

Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over
No. 1 ..... $1.00
No. 6 ..... 63¢
No. 79 ..... 50¢

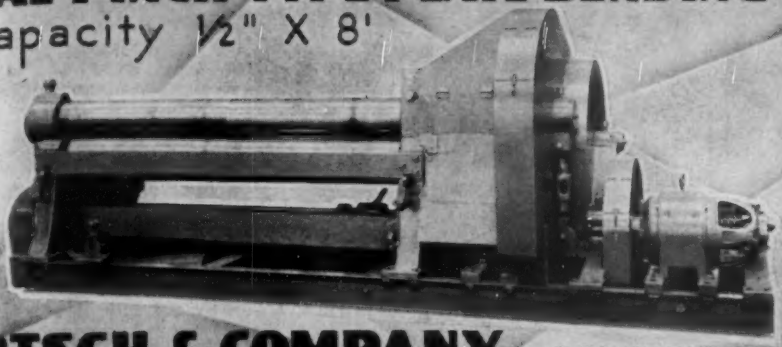
Manganese-Boron, 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.
Ton lots $1.44
Less ton lots 1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered
Less ton lots $2.05

Silcaz, contract basis, delivered
Ton lots ..... 45.00¢

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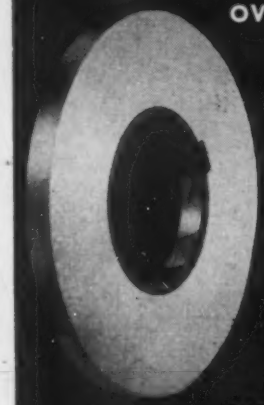
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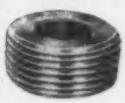


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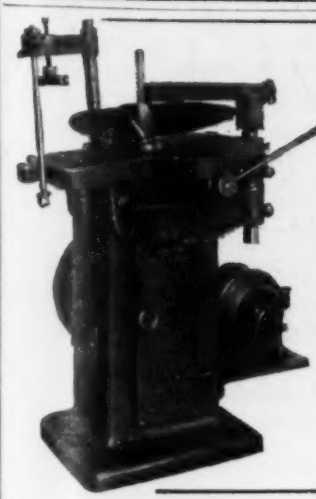
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REBUILT—GUARANTEED ELECTRICAL EQUIPMENT

DIRECT CURRENT MOTORS
230-V.D.C.

Qu.	HP	Make	Type	RPM
6*	3000	Whse	Mill	600
14*	1500	Whse.	Mill	600
10*	800	Whse.	Mill	600
8	700	Whse.	Mill	235/700
1	350	G.E.	CD-169	1150
1	250	G.E.	MPC	325/975
1	200/250	G.E.	MPC	300/900
1	200/250	El. Dy.	Size 22	400/1200
1	200	Whse.	Mill	300/1200
1	150	G.E.	MPC	400
1	100/90	G.E.	MPC	625/1125
1*	125	Whse.	SK-190	600
2	125	Whse.	SK-184	575/850
6	100	El. Dy.	20-S	450/1100
6	T.E.F.C. 75		C.W. 534	860
1	50	Whse.	SK	250/1000
1	40	Whse.	SK-140	500/1700
1	35	G.E.	CD-125	400/1200
1	25	G.E.	CD-147	300/1200

*—525 and 600 V. D.C.

MOTOR GENERATOR SETS

Qu.	K.W.	Make	RPM	Volts DC	Volts AC
1 (SU)	2400	Whse.	720	600	4800/2400
2	1750	G.E.	450	250	4600/2300
2	1200	Whse.	720	600	2300
2	500	C.W.	720	575	2300/440
1	400	C.W.	1200	125/250	2300/440
1	400	C.W.	720	250	2300/440
1	300	Whse.	900	250	2300
1	150	G.E.	720	250	2300/440
1	100	Ridgway	1200	275	4000/2300
1	100	C.W.	1200	125	440/220
1	100	Whse.	900	250	2300

CRANE & MILL MOTORS
230-V.D.C.

Qu.	HP	Make	Type	RPM
1	265/200	G.E.	MDP-420	350/410
2*	187	G.E.	MDS-418	435
1	150/200	Whse.	MCA-100	370/300
4*	140/100	G.E.	MDA-108	430/500
2	140/100	Whse.	MCA-90	500/415
1	110/85	Whse.	MCA-80	520/450
4	90/70	Whse.	MCB-70	440/400
1	85/65	G.E.	CO-1811	600/500
1	80/54	C.W.	F.W.	575/480
3	65/50	Whse.	MCA-60	475/425
1	50	G.E.	CO-1830	525
1	50	G.E.	CO-1829	750
1	50	G.E.	CO-1810	725
3	45/57	Whse.	K-9	515-470
2	35/45	G.E.	CO-1810	500/450
1	35	G.E.	MDA-104½	650
2	25/50	G.E.	CO-1828	750/650
2	25	G.E.	MDS-410	525
4	40/30	Whse.	MCA-50	525/440
4	30/40	Whse.	MCB-50	525/440
3	25/25	G.E.	MDS-408	575/500
6	20/28	Whse.	MCA-40	650/550

*Compound wound, all other series

SLIP RING MOTORS
Constant Duty 3 phase 60 cycle

Qu.	HP	Make	Type	Volts	RPM
1**	1800	G.E.	MT-498	2300	257
1**	1200	G.E.	MT-20	2200	277
1	700	G.E.	I-M	2300	400
1*	600	G.E.	MT-20	2200	360
1**	500	Al. Ch.	ANY	2200	514
2	500	G.E.	I-16-M	2300	450
2	400	G.E.	MT-412	2200	450
1	300	G.E.	I-M	2200	600
1	250	Whse.	CW-927	440	1200
1	250	G.E.	MT-414	2200	390
1	250	Al. Ch.	ARY	440	720
2	100	G.E.	I-15-M	2300	514

SQUIRREL CAGE MOTORS
3 phase 60 cycle

Qu.	HP	Make	Type	Volts	RPM
1	400	G.E.	IK	2300	514
1	300	Whse.	CS 890	2300	1750
1	200	Al. Ch.	A.R.	440/220	580
1	200	Whse.	CS 872 C	2200	1160
2	125	Al. Ch.	A.R.	2300	1750
1	125	Al. Ch.	A.R.	2300	490
1	100	G.E.	KT 562	440/220	570
1	100	Whse.	CS 938	2200	495

SYNCHRONOUS MOTORS
3 phase 60 cycle

Qu.	HP	Make	PF	Volts	RPM
1	3000	Whse.	80	4800/2400	720
2	2100	G.E.	100	2300	360
2	2000	G.E.	80	2300	720
2	1750	G.E.	100	2200	3600
1	750	G.E.	80	2300	450
1	710	G.E.	80	2300/440	720
1	250	G.E.	100	2300	514
1	250	G.E.	80	2300	600
2	200	Whse.	80	440/220	1200
1	187	G.E.	80	440/220	720
1	150	G.E.	100	2200	900
1	150	G.E.	80	440/220	450
2	125	G.E.	80	4000/2200	1200
1	125	G.E.	80	2200	900
2	100	Whse.	80	440	1800
2	100	G.E.	80	440/220	600

10 Ton Champion, overhead crane, 95' span or less, will furnish rebuilt for 440/220 volt, 3 phase, 60 cycle or 230 VDC, high speed particularly adaptable for outdoor service, 45' lift.

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NEWS OF USED AND REBUILT MACHINERY

Detroit Business Uneven . . . The uneven business atmosphere in Detroit has had a direct reflection on used machinery and manufacturing equipment sales.

Replacement business has not been bad. Toolroom equipment has held fairly level and probably has kept the used machinery business in the Motor City from falling flat on its face.

But dealers in heavy equipment such as cranes and other items that come under the heading of capital improvements are hard pressed to find a market.

One dealer who specializes in cranes explains it this way:

"Most of the inquiries we receive are from people who are in the planning stage. They need a crane for a new building they might or might not construct. They want figures on equipment for a tentative expansion. Or they want costs on a possible revamping of their manufacturing layout."

Planners, Not Buyers . . . He estimates that more than 85 pct of inquiries come from people who do not specifically need the equipment (cranes in this case), but are just in the planning stage.

"We go to a lot of time and trouble to locate just what the customer wants and then find out he wanted the figures for his future plans," he laments.

Not only are 85 pct of those inquiring not actually interested in making a purchase, but the number of inquiries for heavy equipment is down to about 65 pct from a year ago, the same dealer explains.

However, in Detroit cranes are becoming more available, both in better quality and at lower prices. A lot of them come from companies that are revising their materials handling methods, which may be a clue to future markets.

Expansion Undecided . . . But the main significance is that manufacturers here are undecided whether to go ahead with their capital improvements and expansions or not. So far this year business has been uncertain at best and the results are going to show on the books of machinery dealers. The outlook has been uncertain enough to keep most of the planning in the tentative stage.

The only consolation dealers can get from this line of reasoning is that if business should show substantial gains, a lot of this planning for expansion would be translated into quick sales. But that's not much reassurance to a dealer, such as one interviewed by THE IRON AGE, who has held in stock for more than 2 years a pair of cranes that carried price tags of $90,000 each when new.

Tool Builder Auctions . . . Just like the used car dealers who get tired of looking at the same models on their lot for weeks, a Los Angeles machine tool manufacturer last week decided to auction slow items. Diamond Machine Tool, a punch press manufacturer, dealer and importer auctioned some of its own products, trade-ins and other machinery valued at $560,000 in an auction, believed to be one of the few of its kind in the industry. One new punch press valued at $8600 went for $7500. About 150 buyers attended.

Easy credit terms were also set up to permit smaller industries to compete. With credit approval 48 hours before the auction, no down payment was required and final installment in 18 months. Without credit approval, terms were 25 pct down and balance in 18 months.

See Few Changes . . . The omnibus tax bill (H.R. 8300) goes into conference this week to iron out differences between House and Senate versions. These adjustment operations are not expected to alter the rulings on used machinery.